

Sphenella and some allied genera (Trypetidae, Diptera).

by

H. K. MUNRO

Division of Entomology, Pretoria.

It is with pleasure that this paper is included in the volume of the Journal of this Society that is dedicated to Dr. A. J. T. Janse. The author has known Dr. Janse for close on fifty years and owes him much for help and encouragement in the past. Having met him first while still a school boy, it may well be that one's feelings and attitude to such a person as Dr. Janse may change during the years from those of a youth to those of one who has also engaged in taxonomic research ; from a pupil to a colleague.

Dr. Janse has always been willing to help in the identification of moths and has been of great assistance to the Division of Entomology. The author has had the privilege from time to time of taking visitors from other countries to meet Dr. Janse and to inspect his remarkable collections of moths. Usually they were shown many of his working methods, including not only the collecting and study of moths, his library and extensive indexes, but also the making of insect drawers and cabinets and indeed of carpentry in general. In short, each visit was a demonstration of what one person can accomplish by himself.

In an attempt to stabilise the genus *Sphenella*, it has been necessary to consider certain other, apparently allied, groups. However, this study cannot be complete in itself since an understanding of wider group-relationships is needed. With a larger number of forms, the limits of higher groups become more difficult to define. This is especially so with the genera : to place many species in larger genera may result in a heterogeneous grouping, while indiscriminate splitting becomes quite unsatisfactory. The restriction of genera by avoiding the use of characters that could not reasonably be considered of generic value is desirable, but any character may be given widely different values from one group to another. The association of species in a genus or other group is generally accepted, at least as a working basis, as an indication of, or even actual, genetic relationship. The position is not simple and it is needful to evaluate the characters concerned both as regards their phylogenetic origin and functional use. This may be pertinent should it become necessary to place in one genus geographically widely separated species that are apparently endemic to their areas. At the same time, genera and species may be more widely distributed than regional studies would generally indicate. An analysis of certain characters, mainly those used in the guide given here, shows that the genera are perhaps to be recognised more by the varied combinations and permutations of these characters than by marked differences in any one of them.

Terminology of Types.

In this study the need has arisen to substitute another specimen for a type that has been destroyed and also to establish specimens to represent an allotype and paratypes where such had not before been described. A detailed discussion of types is not intended.

It is very desirable that certain terms should be restricted to the original specimens on which a species is named. The most important of these are : holotype, allotype and paratype. This usage shows at once that the specimens concerned were seen and used by the original author. The simple word "type" should not be used, and the general use of "cotype" and "syntype" avoided.

In the case of insects the holotype should be a fully developed adult in good condition, either male or female. Theoretically preadult stages may be used for the description of new species ; this should certainly be avoided although no hard and fast rule can be applied since in some groups of insects a preadult stage may be necessary.

Of the large number of terms used to designate types of various kinds, most apply to post-descriptive needs. One of the most important is in the use of the prefix "neo". As is commonly accepted, this prefix can only indicate that *the original specimens have been destroyed or lost* (not merely mislaid !) and are no longer available. There is usually most need for the replacement of a holotype as a neoholotype; the necessity for such action and just what specimen should be chosen will depend on various circumstances that need not be detailed here.

To replace an allotype or a paratype may not be so essential and perhaps not very desirable nor even permissible. There is, however, one case in which the idea of an allotype and for its provision must be considered. By definition an allotype is a specimen of the opposite sex to the holotype. A species may be described on a single specimen or on two or more all of the same sex, the holotype and paratypes. In such cases it seems to be generally felt that, when a specimen of the other sex becomes available, it should be given a definite type designation. To call such a specimen an „allotype" as has apparently been done, must be deemed incorrect, since an allotype must be part of the original describer's material and so recorded by him ; to label a later specimen as such is misleading. The term „neallotype (neo-allotype)" is also wrong since this implies that an original allotype has been destroyed. Therefore, to avoid confusion and to make certain as to what such a later specimen is, the term „metallotype" is proposed and is used here, to indicate the *first* specimen of the opposite sex to the holotype to be described and designated as such by whomsoever it may be. In order to give the most stability to a metallotype, it should, if at all possible, be directly compared with the holotype and be from the same locality (area). Further, it is also very desirable that more specimens should be available, some of the same sex as the holotype. Such other specimens, when available, and no others later, and which are used for comparison in erecting a metallotype, to become metaparatypes. There cannot be a „metaholotype". The basic idea is thus to provide „types" to meet the

need when types of the categories desired have not previously been described as opposed to the case where original types have been destroyed.

The foregoing ideas have been formulated after discussing the subject with Mr. L. Vari, lepidopterist of the Transvaal Museum, Pretoria. Lists of "types" have been studied, especially an extensive typewritten one compiled by Dr. C. P. Alexander — it is not known whether this list has been published.

As regards types of new species described in this paper, the Trustees and Director of the Coryndon Museum, Nairobi have kindly agreed that types from among their material may be kept in South Africa in the collections of the Transvaal Museum, Pretoria. The types are of the following new species : *Paratephritis karura* ; *P. umbriifera* and *Sphenella crenata* ; paratypes will be returned to that Museum. Other types are in the collection of the Division of Entomology, Pretoria, (South African National Collection of Insects) including that of *Paratephritis incomposita* received from the Scott Agricultural Laboratories, Nairobi.

As a group the genera and species included here may be recognised thus : two lower orbitals, one dark and one pale upper ; postorbitals yellow, with some yellow or black setae ; frons slightly pubescent, no median stripe ; arista micropubescent or hardly perceptibly so : labella moderate, about 0.5 to 0.6 length of mouth opening, never elongate ; epistome slightly to moderately prominent. The head is, in fact, quite like that of *Tephritis*, the chaetotaxy similar, only the fronto-facial angle tends to be wider and the labella longer. Thorax : bristles normal, dark, no scapulars, one mesopleural and usually a lower smaller and paler one, pteropleural pale, four long scutellars. Wing-pattern typically banded, a bar on costa from base to median cross-bar and an apical bar, subhyaline spots variable ; or pattern tending to reticulate, or more or less dimidiate, or reduced, never with apical fork. Femora 3 distally with or without antero-ventral bristles ; lower squama wide. Abdomen dark, or posterior margins of tergites often yellow, narrowly or more widely, or may increase considerably leaving narrow, dark cross-bands which may be broken in the middle line, or abdomen occasionally quite yellow ; pubescence yellow, often dark on dark areas, or all dark. The male terminalia show characters of generic value. There may be noted the single preniseta on each twisted rod in *Sphenella* and the curious posterior prongs on tergum 9 in *Oedosphenella* and *Telaetes*. Another feature is the appearance of the strap-like sternite 6 : in *Sphenella* there is a rounded „hole”, sometimes obscure, covered with membrane, in others there is some difference in the two arms of the Y-shaped portion, one arm of which may be free or united. The aedeagus does not show marked differences. In some species there are strong specific differences in the shape of tergum 9.

For present needs there are two main larger groups from which the present group may be distinguished :

A. Wing-pattern without apical fork.

1. lower squama wide, as wide as upper or a little narrower ; pteropleural pale ; labella moderate. *Sphenella* group.
2. lower squama narrow ; 1 to 3, typically 2 lower orbitals ; frons bare, rarely

slightly pubescent, often with frontal stripe; labella moderate to very long; pteropleural pale; wing-pattern typically reticulate, sometimes reduced, or banded or reticulate banded. Abdomen mostly dark, usually with a row of submedian tergal spots on either side. This group has been treated in detail in another paper *Paroxyna* group.

- B. An apical fork on the wing-pattern. This series includes many species mainly characterised by the apical fork on the wing formed by a relatively large apical spot, one above tip of vein 3, and one below tip of vein 4; generally apparent even if pattern is more reticulate, but may be reduced leaving however usually a dark spot at ends of veins 3 and 4. In *Tephritis* the pteropleural is dark, but pale in the more *Trupanea*-like species
Trupanea-Tephritis complex.

Guide to Genera.

1. femora 3 with short to long row of antero-ventral bristles 3
- femora without such bristles 2
2. vein 3 setose to upper cross-vein or beyond *Telaletes*.
- vein 3 not setose, or 1 or 2 at knot, or not more than a few at base *Orotava*.
3. vein 3 setose to upper cross-vein or beyond *Paratephritis*
- vein 3 not setose, rarely 1 to 3 at knot 4
4. scutellum quite flat, yellowish or yellowish-brown; wing-pattern typically as in *S. marginata*, but variable to dimidiate or more less reduced; dorso-centrals generally on or near line of anterior supra-alars; in male, „twisted rod” strongly modified, only one prensiseta on each, no posterior prongs on tergum 9 *Sphenella*
- scutellum slightly to moderately or strongly convex; wing-pattern more strongly banded; dorso-centrals nearer midway between anterior supra-alars and suture; in male, 2 prensisetae on each rod, and a pair of posterior prongs on tergum 9. 5
5. scutellum shining black, convex, almost swollen; head more oval, fronto-facial angle 130° *Oedosphenella*
- scutellum slightly convex, almost flat, brownish; head angular, fronto-facial angle 105°, prominent *Bevismyia*

Biology.

A knowledge of the biology and immature stages, especially of the puparia, is of value to the taxonomist, but the correlation of taxonomic and biological data must be done with caution.

Species of *Sphenella* infest flower-heads of Compositae, sometimes causing a swelling; species of *Paratephritis* cause stem-galls, as may some others. Puparia of *Sphenella* are characteristic, while those of others, as far as known, are more usual. I am indebted to the staff of the National Herbarium, Pretoria for the identification of host-plants, and for checking names.

TELALETES Mro.

Munro, 1938, *Proc. R. ent. Soc. London*, B. 7 : 119.

Hering, 1944, *Siruna Seva*, 5 : 6.

Allied to *Sphenella* ; 2 lower, 1 dark and 1 pale upper orbitals, 4 long scutellars ; it differs in the setose vein 3 and lack of distal antero-ventral bristles on femora 3. In the male tergum 9 has a pair of posterior prongs and the oviscapae with fine brownish pubescence, not white basally.

The genotype is *Trypeta ochracea* Lw., but the absolute identity of this is not clear ; another, distinct species from East Africa is to be described elsewhere.

Telaletes ochracea (Lw.)

Trypeta ochracea Loew, 1861, *Berl. ent. Zeit.*, 5 : 295, Tab. II, Fig. 25.

Oxya ochracea (Lw.) Bezzi, 1908, *Bull. Soc. ent. Ital.*, 39 : 141.

Acanthiophilus ochraceus (Lw.) Bezzi, 1918, *Bull. ent. Res.*, 9 : 41; 1924, *id.* 15 : 139 ; 1924, *Ann. S. Afr. Mus.*, 19 : 559, Pl. xv, fig. 112 ; 1926, *Bol. Lab. Zool. Portici*, 18 : 296. Munro, 1926, *Dept. Agric., S. Afr., Ent. Mem.*, No. 5 : 31; 1929, *id.* No. 6 : 15 ; 1935, *id.* No. 9 : 42. Phillips, 1946, *Mem. Amer. ent. Soc.*, 12 : 104.

Telaletes ochracea (Lw.) Munro, 1938, *Proc. R. ent. Soc. London*, B. 7 : 119.

The type, a female, is in the Zoologisches Museum der Humboldt-Universität, Berlin. It is labelled „Caffr.: Drege : 2473”, and it is not possible to discover where it was collected. Drege travelled from Namaqualand around southern Africa and on the east as far as Durban, and the specimen may have been taken anywhere from the Cape Peninsula to Natal.

It is not necessary to detail here the available material. There are many specimens reared and collected from the Cape Peninsula to Natal and the Transvaal, as well as from Kenya that have been taken to be *ochracea* Lw. With some variation, the wing-pattern (fig. 6.) is much alike in all, but there is some variation in the shape of the head, and in South African specimens there are two forms of the aedeagus (fig. 73 a, b), even from one locality. To analyse and correlate these and other possible differences cannot be undertaken at present.

Male: sternites 5 and 6 (fig. 33); the prongs on tergum 9 (fig. 51, a. post., b. lat.) seem more constant; cerci (fig. 51c) scoop-like, the inner surface granulate. In females no differences are apparent, so as the type is a female, it may ultimately be impossible to say which is *ochracea* if there are two species. The oviscapae has fine, black pubescence. The spermatheca (fig. 94a) and tip of aculeus (fig. 95a) are shown.

Biology.

The larvae live in flower-heads of species of *Senecio*, only once being reared from *Emilia flammula*. No nest is made, the pale, whitish puparium being more or less fastened among the remains of the seeds.

Host-plants.

The roman figures indicate the month.

<i>Emilia flammea</i> Cass.	Pretoria (VI).
<i>Senecio barbatus</i>	Durban (III).
<i>S. burchellii</i> DC.	Hout Bay, Cape (IX).
<i>S. concolor</i> DC.	Pretoria (IX).
<i>S. coronatus</i> Harv.	Natal National Park (XI); Sarnia, Natal (IX).
<i>S. decurrens</i>	Cedara (II).
<i>S. elegans</i> L.	Wilderness, Cape (VIII); Strand, Cape (XII).
<i>S. fraudulentus</i> Harv.	Salisbury, S.R. (III); Shewasaula, T.P. (V); Rosehaugh, T. P. (III).
<i>S. orbicularis</i> Sond.	Pretoria (II).
<i>S. paniculatus</i> Berg	Durban (XI).
<i>S. quinquelobus</i> DC.	East London (VII).
<i>S. rigidus</i> L.	Hout Bay, Cape (IX).
<i>S. speciosus</i> Wld.	East London (II); Durban (IX).
<i>S. verdoorniae</i> Dyer	Irene, T.P. (II).
<i>Senecio</i> spp.	Camps Bay, CP. (IX); Fishhoek, Cape (IV); Natal National Park (III); Malealea, Basutoland (III).

OROTAVA Frey

Frey, 1936, Soc. Sci. Fennica, Comm. Biol., VI. 1 : 93.

Epistome not very prominent, barely to outer margin of antennae, 3 lower, 2 upper orbitals, postorbitals fine, black; arista bare; no distad antero-ventral bristles on femora 3, at most a row of stronger hairs; vein 3 bare; scutellum flat, 4 bristles; squamae wide; abdominal tergites with black pubescence, sternites normal; prensisetae widely separated.

This genus is included for comparison with *Sphenella*, but may not be very close; Frey suggests it may be nearer *Tephritis* but further comparisons are needed. The genotype is *caudata* Beck., and two oriental species are included here.

There is some resemblance between *Orotava* and *Tephritoedaspis* Rohdendorf (genotype *T. transitoria* Rohd. 1934, Konowia, 13: 95-96) but of the latter it is stated "Squamae sehr kurz und schmal" and "Rüssel dick".

Orotava caudata (Beck.)

Sphenella caudata Becker, 1908, Mitt. zool. Mus. Berlin, 4: 140. Hendel, 1927, Fl. Pal. Reg., 49, Tryp., p. 170.

Orotava caudata (Beck.) Frey, 1936, Soc. Sci. Fennica., Comm. Biol., VI. 1 : 93.

[NOTE: *Tephritis cribrata* Bigot, 1892, *Bull. Soc. Zool. France*, 16: 277. Hendel, 1927, *Fl. Pal. Reg.*, 49, *Tryp.*, pp. 170, 213, nom. bis lect. ♀, ? = *Sphenella caudata* Beck.

Authors suggest that *Sphenella caudata* Becker may be the same as this; however, Mr. J. E. Collin, Newmarket, England, has kindly examined the type of *cribrata* and in a letter of the 4th February 1956, says: "*Tephritis cribrata* Bigot ♀ 'Type' is among Bigot's specimens in my hands, and was described in *Bull. Soc. Zool. France* and not in *Bull. Soc. Ent. France* (see Hendel). It is certainly not the same as *Orotava caudata* Beck. There is no doubt about this specimen being the type; it is labelled 'Canaria, Allaud', and through labelled '♂' is a ♀. There is also a very obvious printer's error in '8' instead of '3' in size in the description. The specimen is in poor condition, gummed to a piece of card. Its wings are somewhat crumpled (edges folded), but the markings are certainly more like those of *praecox* than like those of *caudata*, though I doubt whether the Canary Island *praecox* is the same as our British species of that name. The darkening on the legs has much faded.']

Orotava caudata is only known from the Canary Islands. I have a male kindly sent to me by Dr. Hering; the specimen is in rather poor condition and the bristles mostly abraded and I am indebted to Dr. Richard Frey and to Dr. Hering for further data on the species. When my specimen was treated in potash to bring out the labella, it was seen that they were eaten away but seemed to be about half the length of the mouth opening as stated by Dr. Frey; squamae both wide; wing (fig. 7), pattern somewhat *Sphenella*-like but more broken up by subhyaline spots, stigma elongate. Male: sternites 5 and 6 (fig. 34); tergum 9 (fig. 52b, lat., c, post.) showing rounded flange with smooth margin, the twisted rod and prensiseta (fig. 52d) and the scoop-like cercus with granulate inner surface (fig. 52a); aedeagus (fig. 74) differs from that of *Sphenella*.

***Orotava senecionis* (Ito) comb. nov.**

Paratephritis senecionis Ito, 1952, *Bull. Naniwa Univ.*, (B), 2: 22, figs. Hering, 1952, *Treubia*, 21: 289.

Reference to this species is made under *Paratephritis*. I have 2 ♂♂ and 3 ♀♀ kindly sent to me by Dr. Ito. Following the scheme outlined here, in the absence of antero-ventral bristles on femora 3, and only a few setulae at the base of vein 3, this species cannot remain in *Paratephritis*. It agrees more nearly with *Orotava* and, on the whole also, in the male terminalia; differences in the appearance of tergum 9 could be no more than specific, (*caudata*, fig. 52b; *senecionis*, fig. 53), while the usual complexity of the aedeagus, (*caudata*, fig. 74; *senecionis* fig. 75), make it difficult to indicate comparable differences with certainty till larger series can be examined. Tergum 9 in *senecionis* has a flange with a very irregular margin and numerous bristles posteriorly below; the prensisetae are rather widely separated; aedeagus (fig. 75) with smaller vesica that does not form a "hood" as in *Sphenella*.

***Orotava naucina* (Her.) comb. nov.**

Paratephritis naucina Hering, 1952, *Treubia*, 21: 288, Fig. 16.

This is stated to be very near *senecionis* and in the absence of specimens and further data, will have to be placed here.

PARATEPHRITIS Shir.

Shiraki, 1933, *Mem. Taihoku Univ.*, 8 (Ent. 2) : 433. Zia & Chen, 1938, *Sinensia*, 9 : 11. Ito, 1949, *Trans. Kansai ent. Soc.*, 14 : 1.

Through the kindness of Dr. S. Ito, I have been able to study specimens of the genotype, *P. fukaii*. However, following the scheme proposed here, it seems that most of the other oriental species that have been included, may not belong to, while certain African species must be included in the genus.

The genus is described in detail by Shiraki. It may be noted that vein 3 is setose to or beyond the upper cross-vein and femora 3 have distal antero-ventral bristles; the lower orbitals may be accepted as two, some specimens having a weak to moderate, pale third in front.

The oriental species so far included may be separated thus, as far as available data allows :

- f. 3 not bristly. v. 3 setose.
fukaii Shir., *formosensis* Shir.
- f. 3 bristly, v. 3 with at most a few setulae at base.
abstracta Mro., *xenia* Her., *unifasciata* Chen., *takeuchii* Ito.
- f. 3 bristly, v. 3 setose.
senecionis Ito, *naucina* Her.

This means, therefore, if the characters used have any generic value, that only *fukaii* and *formosensis* remain in *Paratephritis*; *senecionis*, which *naucina* apparently closely resembles, may be placed in *Orotava*. The rest seem to require a new genus if they cannot be placed elsewhere and it is proposed to leave them in *Paratephritis* till further study can be made of these species and of other, related genera.

Careful comparison reveals no valid reason for not including in *Paratephritis* the African species described here. The genotype, *fukaii*, is larger and more robust, the frons more pubescent and the wing pattern heavy. The African species are smaller and more *Sphenella*-like, especially in the wing-pattern. Common characters are: the bare arista, the chaetotaxy, e.g. the dorso-centrals about midway between suture and anterior supra-alars, vein 3 setose at least to upper cross-vein, usually well beyond in African species, and femora 3 with distal antero-ventral bristles, a longer row in male, shorter in female. In the males tergum 9 has a pair of triangular flanges, more ornate in *fukaii*, simpler in the others.

Oriental species.***Paratephritis fukaii* Shir.**

Shiraki, 1933, *Mem. Taihoku Univ.*, 8 (Ent. 2) : 436, Fig. 85, Pl. XII, fig. 2.
Ito, 1952, *Trans. Shikoku ent. Soc.*, 3 : 13.

A larger, robust species with heavy wing-pattern consisting of a strong median bar united to a broad costal bar to wing base, a broad bar on hind margin and a strong apical band.

Male : tergum 9 (fig. 54a), posteriorly a pair of triangular processes (fig. 54b) curved inwards towards each other and spinulose on the upper edge; below are short flanges with a few long bristles ; two prenisetae on each rod.

Paratephritis formosensis Shir.

Shiraki, 1933, *l.c.* : 438. Ito, 1949, *l.c.* : 1.

Distinguished from *fukuii* mainly on colour differences ; no direct statement except that it is "very closely allied".

Paratephritis abstracta Mro.

Munro, 1935, *Rec. Ind. Mus.*, 37 : 26. Ito, 1949, *Trans. Kansai ent. Soc.*, 14 : 1.

Femora 3 bristly, vein 3 with a few setae at base ; I have no further notes on the four lower orbitals, but two may be supernumerary and paler. An unpublished sketch I made of the wing is like that given by Hering for *xenia*.

Paratephritis xenia Her.

Hering, 1938, *Ark. Zool. K. Vet. Akad.*, 30A : 53, Abb. 57. Ito, 1949, *l.c.* : 1.

Stated to be quite like *abstracta*, chiefly colour differences are given ; lower orbitals two.

Paratephritis takeuchii Ito.

Ito, 1949, *l.c.* : 2, Abb. 1, 2.

Mainly colour differences given ; no setae shown on vein 3 in figure of wing, the pattern being much like that of the two previous species.

Paratephritis unifasciata Zia & Chen.

Zia & Chen, 1938, *Sinsensia*, 9 : 111, fig. 28. China.

The wing-pattern is more uniformly and evenly dark with a rather narrow pre-apical hyaline band ; vein 3 with a few setulae at base femora 3 evidently bristly.

(Paratephritis) senecionis Ito.

see under *Orotava*.

(Paratephritis) naucina Hering.

see under *Orotava*.

African species.

A general description follows :

Like *Sphenella* ; fronto-facial angle wide ; frons with slight pale pubescence in front, 2 lower, one dark and one pale upper orbital, ocellars strong, postorbitals, 4 yellowish with usually row of black setae ; lunule short ; antennae

a little shorter than face, joint 1 with pale hairs, 2 with dark setae, 3 darker yellow, arista bare, at most very little, sparse micropubescence; labella about half length of mouth opening. Thorax: dust variable, grey to brown, pubescence coarse, pale, bristles normal, no scapulars, dorso-centrals about midway between suture and anterior supra-alars, usually a smaller, lower mesopleural, pteropleural pale; wing-pattern more like that of *Sphenella marginata*, but spaces between bands with more or less complete, sometimes pale reticulation; vein 3 setose to upper cross-vein or beyond, sometimes below as well; legs: femora 3 with distal antero-ventral bristles, a complete row in some males; squamae of equal width; scutellum flat, triangular, 4 long bristles of equal length. Abdomen: black or tergites more or less yellow on hind margins, dust usually slight, pubescence black, or yellow on yellow areas. Oviscape black, pubescence black, normally conical, mostly flattened in specimens. Male: sternite 5 does not appear bilobed; tergum 9 with pair of sharp, downward, posterior prongs; normal two prensisetae.

Guide to species.

1. Abdominal pubescence yellow, especially on yellow areas and across hind edges of tergites, black on dark areas *incomposita*
- Abdominal pubescence dark or black, only paler on sides, at base and sometimes at apex 2
2. A wide costal band without hyaline spots united to apical and wide middle band, leaving only a small hyaline area in posterior cell 2 ♂ *umbrifera*
- Apical band separated as usual by complete hyaline band 3
3. All bands wide and without hyaline spots or barely with a few very small subhyaline spots, the middle band straight and almost parallel sided ♀ *umbrifera*
- Bands rather narrower or more broken up by hyaline to subhyaline spots which extend well into angle between costal and middle bands, the latter somewhat outwardly curved *karura*

Paratephritis incomposita n.sp.

Holotype ♂, allotype ♀, 21♂, 22♀ paratypes, KENYA: Limuru, 15.iii.51, G. De Lotto. 1♀, Meru, vii.1943, V.G.L. van Someren. UGANDA: 3♀ paratypes, Kawanda, 3.x.42. H. H(argreaves) — one female with label, "♀ larva in flowers of *Senecio vitalba*."

The types were chosen from the good series from Limuru, although the specimens are in rather poor condition and seem darker than they should be. Those from Meru and Kawanda may be better coloured, but are all females.

Length, ♂ 3.0 mm., ♀ 4.0 mm., wing, ♂ 3.5 mm., ♀ 3.8 mm. Head, length: height: width, 6: 7.5: 10, brown, black behind above neck, eye distinctly short pilose; frons a little longer than wide, slightly narrowed to antennae, 0.5 head; antennae 0.9 face; parafacials narrow, about 0.2, gena 0.5 third antennal joint; epistome short, 0.4 antenna; labella 0.6 mouth opening. Thorax black, dust slight, grey with brownish tinge, pubescence pale, humeri to wing base yellow; legs brown, femora 3, male, antero-ventral bristles forming a row on distal

end, but on proximal half of mid lower area an irregular group of bristlehairs; female 2 or 3 distally and two or three shorter behind them; wing (fig. 8.) rather narrow, width 0.3 length, vein 3 setose to upper cross-vein or beyond. Abdomen: tergite 2 yellow, or more or less blackened, from 3 to end with about posterior third yellow; dust slight, greyish, pubescence black on black, yellow on yellow. Oviscape conical, 0.2 wing-length, black, pubescence fine, black. Male: sternites 5 and 6 (fig. 35); tergum 9 (figs. 55 a, b) with pair posterior spines directed downwards and somewhat inwards; aedeagus (fig. 76, a lat., b dorsal) much like that of *Sphenella* species.

***Paratephritis karura* n.sp.**

Holotype ♂, allotype ♀, 1 ♂, 1 ♀ paratypes, KENYA: Nairobi, Karura Forest, Jan. 1938, V.G.L. van Someren (stated to have been reared from "orange creeper", Compositae).

Length ♂ 3.5 mm., ♀ 3.9 mm., wing ♂ 3.6 mm., ♀ 3.5 mm. Head, length: height: width, 6: 8: 10, yellow, slightly dark above neck, eye very short pilose, inconspicuous; frons, width 0.9 length, 0.5 head, a little narrowed to antennae; antennae 0.8 face; parafacials narrow, 0.2, gena as wide as third antennal joint; epistome projecting about 0.6 antennae, pubescence on sides dark; labella 0.56 mouth opening. Thorax, dust dense, brown, grey on front edge, brownish on pleura; bristles normal; wing (fig. 9) width about 0.4 length, vein 3 setose to upper cross-vein; legs yellowish brown, femora 3 in male with antero-ventral row along whole length, but shorter on proximal third, in female usual 3 bristles. Abdomen: tergites black, 2 brownish, hind margins about one-third yellow, in male 5 with triangular area in middle, in female 6 mainly yellow; dust slight, pubescence fine, black, shining, apical bristles black. Oviscape shining black, pubescence black, 0.22 wing-length, flat in specimens. Male: terminalia very like *incomposita*, tergum 9 laterally (fig. 56); the margin of the upper side of the base of the posterior prong is variable, in the figure sharp points appear, but on other prong of same specimen, margin is crenulate.

***Paratephritis umbrifera* n.sp.**

Holotype ♂, allotype ♀, 1 ♀ paratype. KENYA: Shimba Hills, vii.1939, V.G.L. van Someren. (from *Senecio* sp.)

A dark brown species with very heavy wing-pattern especially in the male in which the apical band is hardly separated; the female pattern is very like that of *karura*, but is distinctly heavier and the median band wide and almost without hyaline spots.

Length ♂ 3.2 mm., ♀, 3.5 mm., wing ♂ 3.3 mm., ♀ 3.0 mm. Head, length: height: width, 6: 8: 10; frons deep yellow, width 0.8 length, 0.4 head; antennae 0.8 face; parafacials almost linear, 0.01, gena as wide as, epistome projecting, 0.4, width third antennal joint; pubescence on sides of epistome dark, genal bristle light brown; labella 0.6 mouth opening. Thorax, dust dense, brown, grey on lower mesopleura, brownish on postscutellum; bristles normal; wing (fig. 10 ♂ 11 ♀), vein 3 setose to middle of posterior cell 1; legs yellowish brown, femora 3, male, a row of antero-ventral bristles on whole

length, shorter on proximal half, female usual 2 or 3. Abdomen brown, hind third of tergites yellowish, most in middle of 5 in male, 6 in female yellow except a pair of submedian spots on anterior margin; very slight brown dust; pubescence fine, black.

Oviscape flattened in specimen, ferruginous brown, pubescence black, 0.25 wing-length. Male terminalia not dissected, but the pair of posterior prongs on tergum 9 visible on the specimen.

SPHENELLA Rob.-Desv.

Sphenella Robineau-Desvoidy, 1830, *Essai Myod.*, :773. Loew, 1862, *Europ. Bohrl.*, :76. Bezzi 1913, *Mem. Ind. Mus.*, 3:157; *Bull. ent. Res.*, 15:80; 1924, *Ann. S. Afr. Mus.*, 19:544. Hendel, 1914, *Wien ent. Zeit.*, 33:94; 1927, *Fl. Pal. Reg.*, 49, *Tryp.*, :169. White, 1923, *Cat. Ind. Ins.*, 4, *Trypetidae*, :26. Efflatoun, 1924, *Mém. Soc. r. Ent. Egypte*, 2:85. Shiraki, 1933, *Mem. Sci. Agric. Taihoku Univ.*, 8:400 (*Entomology* No. 2.). Séguy, 1934, *Faune de France*, 28:149. Zia, 1937, *Sinensia*, 8:196. Hering, 1941, *Arb. morph. u. tax. Ent.*, 8:38. Collin, 1947, *Ent. Record*, 59, suppl., (7)-(8). Sineura Lioy, 1864, *Att. Ist. Ven.*, 3a ser., 9:1024.

Sphenella has been redescribed by Loew, Bezzi, Efflatoun, Hendel and Shiraki and all except the last include the wing-pattern as a generic character. The result has been that species that do not belong have been included and others omitted.

Oedosphenella and *Orotava* having already been separated by Frey, the arrangement here has been felt necessary to avoid the inclusion of a possibly rather heterogeneous series of species in one genus. In any case, *Sphenella* is markedly distinct not only from the genera associated with it here, but from other Trypetids I have examined in the single prensiseta each „twisted rod” in the male. However, Aczél (1955, No. 3343 from *Proc. U.S. nat. Mus.*, 104:327) states for the genus *Tomoplaga* “Usually two pairs of shining black, toothlike gonapophyses present, but posterior (lateral) pair more acute and more or less reduced, weaker and shorter than anterior pair, sometimes entirely absent.” In my interpretation, it is the major prensiseta that remains.

Of the species that can be identified, there are one European, one oriental, one Australian and eleven African; among these, however, are the three subspecies of the genotype, *S. marginata*, which ranges from Europe to Africa and Australia. *Sphenella nigropilosa* de Meijere, from Java, does not seem to be a *Sphenella*, but may come within the group. There do not appear to be any New World species that could belong to *Sphenella*; „*Sphenella*” *poecila* Schiner, 1868, *Dipt. Novara Reise*, :268, from Chile, was placed in *Celidosphenella*, Hendel, 1914, *Abh. Mus. Dresden*, 14:48, and does not seem to have anything to do with *Sphenella*.

The genus may be recognised by the combination of characters in the guide; scutellum flat; femora 3 with distal row of 2 to 4 antero-ventral bristles, in males sometimes a row along whole length of femur; abdominal pubescence always pale.

There are strong generic characters in the male terminalia, the single prensiseta being the most remarkable. Sternite 5 is somewhat bilobed, most

so in *nigricornis*, but weak in others and may not be noticed if the sternite is flattened too much on the slide; besides the usual marginal bristles there is usually on each lobe a group of darker (blackish) setae in contrast to the pale, normal clothing on the rest of the surface of the sternite. The strap-like sternite 6 has, at its middle, what appears to be a small, rounded „hole”, but covered with membrane, and not very conspicuous in some species. Tergum 9 is somewhat flattened on top, in lateral view narrowed below; the flange may be large and conspicuous to almost absent; the cerci are mainly spatulate, but modified and variously ornamented from one species to another. The „twisted rods” are modified so that the twist is not, or barely apparent. The broad base of each fits in either side of the posterior opening below the anal region and ends in a narrow rod bent outwards and which has the single preniseta at its apex. The prenisetae may be finely to rather coarsely striate on the inner side and the inner (opposing) margins correspondingly crenulate. The right side of the fultella articulates with the end of the „ring” through an intermediate rod.

A detailed study of the female terminalia must remain incomplete for the present; there is some indication of specific and perhaps generic differences (figs. 93, 94, 95). The oviscape is conical, black with white pubescence on about basal half, fine black on apical half. Only two spermathecae have been observed; they are pear-shaped and may be ornamented to a greater or less extent with stout processes directed distally. The tip of the aculeus has a simple outline but may be more or less trifid. After treatment in potash certain membranous glands of fixed shape have been noted; one (fig. 93.) is morula-like, on a somewhat sclerotised plate on one side of the common oviduct a little beyond where the two oviducts and the spermathecal tubes enter. It has been observed in other Trypetidae, but does not seem to have been recorded before.

Guide to species.

- | | | |
|----|---|----------------------|
| A. | ♂♂. antennae, face and femora black | <i>nigricornis</i> |
| — | ♂♂♀ antennae and face brownish or yellowish; femora occasionally black or blackened | C |
| B. | ♂♂. tergum 9 in posterior view strongly constricted below, the prenisetae projecting on long, narrow rods and a pair of long, pointed processes from inner margins of cerci, there are thus seen four, long, conspicuous, pointed rods directed downwards | <i>helianthoides</i> |
| — | ♂♂. tergum 9 more normal in shape, but cerci showing considerable variation | C |
| C. | Wing-pattern with well-marked, median, transverse band well separated from apical band | 1 |
| — | Median band irregular, or more or less broken up, less separated from apical or even touching at points | 13 |
| — | Pattern dimidiata to vein 4, or much reduced | 14 |
| 1. | A large, dark, infuscated patch over end of anal cell and vein 6 | 2 |
| — | Only small, isolated spots, often paler or evanescent and mainly in inner end of posterior cell 3 | 3 |

2. Pattern (fig. 24) uniformly dense black with sharp margins; smaller species *atra*
 — Pattern (fig. 25) blackish with extensive yellow suffusion especially along costa and between upper ends of median and apical bands, margins diffuse; larger species *ypsilon*
3. Pattern (figs. 20, 21 and 22) rather heavy; inner margin of apical band parallel to outer margin of median band, or if the portions of the inner margin of apical band above and below the hook are not quite in the same straight line, they still remain parallel. *sinensis*
 — Inner margin of apical band diverging strongly outwards so that the hyaline space between the two bands widens markedly to the hind margin of the wing. 4
4. Males. 5
 — Males and females. 7
5. Flanges on tergum 9 very short, inconspicuous or practically absent *marginata* s.l.
 — Flanges large, crenulate, conspicuous, often to be observed on pinned specimen. 6
6. Epistome short, barely one-third width of antennae; apical band on wing not divided; smaller species *orbicula*
 — Epistome projecting to width of antennae; apical band usually divided; larger species *crenata*
7. Fronto-facial angle wide, 130°, the head appearing more oval, eye relatively larger, parafacials and genae narrower, epistome short (see 6). *orbicula*
 — Fronto-facial angle smaller, about 120°, head more angular and epistome more prominent, half to as wide as antennae. 8
8. Femora black except at extremities. 9
 — Femora yellowish to brownish, occasionally slightly blackened. 10
9. Face and antennae black and black pubescence on sides of epistome *♂ ♂ nigricornis*
 — Face and antennae yellowish; epistome pubescence yellowish. *♂ ♂ ruficeps*
10. Setae among postorbital bristles and pubescence on sides of epistome black *♀ ♀ nigricornis*.
 — The setae and pubescence yellow. 11
11. Epistome more prominent, about width of antennae; pubescence on thorax yellow to reddish, often very red or orange, as also pale bristles on head; dust often strongly golden; apical band on wing divided. Oviscape relatively shorter, 0.17 wing length. Male, tergum 9 with strong, crenulate flange; rather larger species *crenata*
 — Epistome less prominent, about half width of antennae; pubescence on thorax paler, or only slightly reddish tinge; male, tergum 9, flange short, or almost absent. *marginata* s.l. 12.
12. A. Apical band on wing usually with well-marked hook and often divided; oviscape relatively shorter, 0.17 wing-length; femora yellow; European form. *ssp. marginata*
 B. Apical band with hook, very seldom if ever divided, a strong tendency for it to become entire and without hook and hyaline spots; oviscape relatively longer, 0.2 wing-length; femora yellow, hind occasionally blackened in male; African form. *ssp. austrina*
 C. Apical band not divided, usually with a wide, rounded tooth on inner margin; sometimes a weak to moderate hyaline spot below tip of vein 2; Australian form. *ssp. ruficeps*

13. A dark pattern with a strong bar over posterior cell 3 to tip of anal cell and few hyaline spots (fig. 26) *rostrata*
 — Pattern paler, bars almost reticulate with numerous hyaline spots and only isolated dark spots in posterior cell 3 (fig. 27); if pattern seems weaker, or more reduced, compare 11 *deletrix*
14. A strong dimidiate pattern above vein 4 reticulate with many hyaline to subhyaline spots *hessei*
 — Pattern more or less dimidiate, but much reduced 15
15. Pattern very pale, a broken reticulation above vein 4 (fig. 29) . . . *helianthoides*
 — Pattern pale, a costal band from base around tip to end of vein 4 (fig. 30) . . . *semisphenella*

Sphenella marginata (Fall.)

Bibliographic references are given regionally under the subspecies.

The general body coloration is fairly constant. Head (fig. 1): lower and anterior upper orbitals, inner verticals and ocellars black, all other bristles, setae among the postorbitals and pubescence pale yellow, genal bristle rarely black; epistome projecting about half width of antennae, noticeably before outer edge of latter. Wing (fig. 12, England; fig. 13, Germany; fig. 14, South Africa; fig. 15, South Africa, extreme form); pattern typical, brownish, rather pale, variable; band along costa from base to median band paler, darker in good specimens, but usually rather darker in middle of outer costal cell; subhyaline yellowish spots few but variable; stigma black, or with a paler spot less often; apical band more often has a hyaline spot below tip of vein 2, the inner margin indented on vein 3 forming a hook. Due to modifications between the indent and the spot, the apical band may become divided, as in some European specimens or the band may become entire without hook or spots as in some from South Africa. Legs: the distal, antero-ventral bristles on femora 3 variable, 1 or 2, a more apparent row of 4 or 5, or 1 strong, dark and 2 or 3 smaller and paler. The abdomen may be quite black, or with slight to moderate yellow hind margins to the tergites. The male terminalia do not show marked characters of specific or subspecific value. Sternites 5 and 6 (fig. 35), the bilobed appearance of 5 not marked; tergum 9 (fig. 57a, posteriorly, somewhat oblique); cerci shallowly concave, ear-like; flange hardly apparent or short (figs. 57c, 58), both forms occurring in any locality; "twisted rods" with wide, more or less triangular, concave base and single prensiseta on narrowed tip; prensiseta (fig. 57b) grooved on inner side and crenulate on inner edge; aedeagus (fig. 77, England; fig. 78, South Africa), moderate sclerotised rods but mainly membranous and variable in appearance, the tip of the apical tube varying partly when seen in different positions, partly, maybe, from slight distortion; vesica moderate, flattened, forming somewhat like a hood over the end of the apical tube.

Female: oviscape short and generally shorter in European specimens; sternite 6 with a strong, median, anterior phragma; spermatheca (fig. 94c) pear-shaped, more closely set with short, stout, blunt processes directed distally; the morula-like gland is shown in fig. 93; aculeus rather wider than in others examined and the extreme tip (fig. 95b) constricted to a narrow point.

The fore-going description applies to series of specimens from Europe and North Africa, Africa and Australia that represent *marginata*. The three populations are regarded here as subspecies on certain over-all differences and on geographical separation. However, as there is some degree of gradation between them, it may not be possible to place some specimens without geographical data, or without the opposite sex.

Australia is sufficiently isolated. The dividing line between European and North African populations and the African (Ethiopian) may not be so marked but it is of interest that while females from Eritrea have the longer oviscapae in those from Egypt it is shorter. Thus a dividing line between the Abyssinia-Eritrea area and Egypt may be well-defined, and, as has been noted (Munro, 1955, *Bol. Lab. Zool. „Filippo Silvestri”*, 33: 412) the Trypetid fauna of Eritrea is strongly African, but with a palaearctic element.

The subspecies may be separated thus:

1. Apical band on wing with well-defined hook on inner margin, more usually with a hyaline spot below tip of vein 2 and a strong tendency for the band to be divided by the union of the spot with the indent at the hook; oviscapae generally shorter, about 0.17 wing-length; Europe and North Africa. *marginata*
2. Apical band more usually entire, the hook extending downwards to join the lower inner margin of band, and hyaline spots to disappear especially in South African specimens in which also femora in male occasionally blackened; oviscapae appreciably longer, about 0.2 wing-length; Africa *austrina*
3. Apical band entire with a broad hook, sometimes tending to disappear and occasionally a trace of a hyaline spot below tip of vein 2; in male femora black, front pair sometimes less so; oviscapae about 0.2 wing-length; Australia. *ruficeps*

***Sphenella marginata marginata* Fallén.**

Tephritis marginata Fallén, 1820, *Dipt. Suec. Ortol.* 7: 8, Pl. 49, fig. 15.

Tephritis marginata (Fall.) Curtis, 1828, *British Ent.*, 5, No. 241. Macquart, 1835, *Suite à Buff., Dipt.*, 2: 465. 18. (*Hist. nat. Dipt.*). Zetterstedt, 1847, *Dipt. Scand.*, 6: 2190. 15. Schiner, 1864, *Fauna Austriaca*, 2: 152. Frauenfeld, 1859, *Sitzungsbr. K. Akad. Wien*, 22: 539; 1863, *Verh. k. k. zool.-bot. Ges., Wien*, 13: (213-224). Phillips, 1946, *Mem. Amer. ent. Soc.*, No. 12: 123.

Trypeta marginata (Fall.) Meigen, 1826, *Syst. Besch. zw. Ins.*, 5: 232, Pl. 49, fig. 15. Loew, 1844, *Germ. ent. Zeit.*, 5: 344, 20, Pl. I, Fig. 17; 1846, *Linn. Ent.*, 1: 499, 20. Boie, 1847, *Ent. Zeit. Stett.*, 8: 327, 12. Schiltz 1848, *Zeit. Ent. Breslau*, : 13. *Ent. Zeit.*, 1-34. Breslau 1849). Walker, 1849, *List Dipt. Brit. Mus.*, 4: 1022 (*Trypeta-Sphenella*); 1853 *Ins. Britann.*, 2: 202, 10. Schiner, 1858, *Verh. k. k. zool.-bot. Ges., Wien*, 8: 667 (*Dipt. Austriaca*). Kaltenbach, 1872, *Pflanzenf.*, : 463 & : 387.

Acinia miranda Wollaston, 1858, *Ann. Mag. nat. Hist.*, I, ser. 3: 116.

Oxyphora miranda (Woll.) Bezzi, 1908, *Bol. Soc. ent. Ital.*, 39: 140.

Sphenella linariae Robineau-Desvoidy. 1830. *Myod.*, : 774 (in part)

Sphenella (Tephritis) marginata (Fall.) De Vos-De Wilde, 1935, *Contribution à l'Etude des larves de Diptères Cycloraphes plus spécialement des larves d'Anthomyides*, : 99, Pl. xx, figs. 122-126.

Tephritis teneriffensis Bigot, 1892, *Bull. Soc. zool. France*, **16**: 278. Becker, 1903, *Mitt. zool. Mus. Berlin*, **2**: 131 and 1908, **4**: 145. Bezzi, 1908, *Bol. Soc. ent. Ital.*, **39**: 141. Hendel, 1927, *Fl. Pal. Reg.*, **49**. *Tryp.*, : 213. Frey, 1936, *Soc. Sci. Fenn., Comm. Biol.*, **6**: 95 and 1945, **8**: 62 (as synonym of *marginata*, sec. Collin, in litt.)

Sphenella marginata (Fall.) Walker, 1836, *Ent. Mag.*, **3**: 73, Pl. I, fig. 18. Loew, 1862, *Europ. Bohrl.*, : 76, Tab. xiii, Fig. 1. Bradley, 1901, *Ent. mo. Mag.*, **37**: 9. Becker, 1903, *Mitt. zool. Mus. Berlin*, **2**: 133, **4**: 139 & **4**: 200; 1907, *Zeit. Hym. Dipt.*, **5**: 391. Hendel, 1914, *Wien ent. Zeit.*, **33**: 94; 1927, *Fl. Pal. Reg.*, **49**. *Tryp.*, : 170, Taf. 12, Fig. 5, Textf. 67. Hamm, 1918, *Ent. mo. Mag.*, **54**: 90. Efflatoun, 1924, *Mém. Soc. r. Ent. Egypte*, **2**: 86 & 126, Pl. 1, figs. 8 & 12, Pl. IV, fig. 3; 1927, *Bull. Soc. r. Ent. Egypte*, **11**: 37, figs. on pls. II, III, IV, VI and VIII (larva and puparium, figs. not numbered). Séguéy, 1930, *Mém. Soc. Sci. nat. Maroc*, **24**: 174; 1932, *Enc. Ent. Dipt.*, **6**: 170. Niblett, *Ent. Rec.*, 1934, **46**: 68; 1939, **51**: 72; 1940, **52**: 15; 1946, **58**: 7; 1947, **59**: 31; 1950, **62**: 23; 1953, **65**: 231; 1940, *Proc. S. London ent. & nat. Hist. Soc.*, 1932-1933: 41; 1939-1940: 87; 1950, *The London Naturalist*, 1950: 13; 1951: 49; 1952: 50. Cameron, 1935, *Jnl. Ecology*, **23**: 286. Hering, 1936, *Bull. Soc. Sci. Acad. Roumaine*, **18**: 5. Frey, 1936, *Soc. Sci. Finn., Comm. Biol.*, **6**: 93; 1945, *id.* VIII, **10**: 62; 1949, *id.* VIII, **16**: 28. Collin, 1947, *Ent. Rec.*, **59**, suppl. : (8).

The following references, mainly given by Hendel, 1927, are incomplete and refer to host-plant records:

Frauenfeld, 1856, *Sitzber. Akad. Wiss. Wien*, **22**: 539, and 1866, no details. Houard, 1908, *Les Zoocécidies des Plantes d'Europe*, Vol. 1, Nos. 5862, 5874, 5877. Kieffer 1895. Hieronymus. Massalongo. Ross. 1788. Rostrup. Schlechtendal. Rossi, 1848, *Syst. Verz. zw. Ins. (Dipt.)*, Wien. Liebel, 1886 Rübsaamen, 1890, *Abbild. d. Galle*.

NOTE. The inclusion of "*Trupanea arcuata*" in the synonymy of *Sphenella marginata* is confusing and unnecessary. It should be relegated to the status of a *nomen dubium* or rejected, or placed where Schrank thought it belonged; it does not appear that any specimens seen by him now remain. The following is an attempt to understand the position.

Musca arcuata Linn., 1758, *Syst. Nat.*, ed. **10**: 592; 1767, ed. **12**: 985. Presumably not a Trypetid.

Musca arcuata Fabr., 1781, *Spec. Ins.*, II: 451. This is a homonym of the previous name and is accepted by authors as equal to *Xyphosia miliaria* Schrank.

Trupanea arcuata (Fabr.) Schrank, 1803, *Fauna Boic.*, **3**: 142, 2508. — this is as the reference is given by Sherborn in his *Species Animalium*. Schrank quotes the Fabricius reference and it is evident that this is what he thought he was recording. This must then be accepted especially if none of his specimens are still available or have been definitely recorded as having been examined later. I have a copy of Schrank's description kindly sent to me by Dr. W. J. Hall of the Commonwealth Institute of Entomology. The details of the wing-pattern could very well apply to *X. miliaria*.

Trupanea arcuata Schrank. Loew, 1846, *Linn. Ent.*, **1**: 499.

It is to be regretted that when Loew placed the "*arcuata*" of Schrank as a synonym of *S. marginata*, he gave no reasons. If Loew accepted *Trupanea arcuata* Schrank (nec. Fabr.) as a "new species" and if he saw specimens, it might have been possible

to have made a change then, and used *arcuata* instead of *marginata*, since *Trupanea arcuata* is not, in itself, a homonym of *Musca arcuata*. Schiner (*Dipt. Austriaca*, 4:667) however, seems to have considered "*Trupanea*" *arcuata* a homonym of *Musca arcuata* Linn., with the probability that it was therefore *Musca arcuata* Fabr., and so could not be a synonym of *marginata*. Dr. Hering, in a letter, seems to agree with Loew's interpretation, but says that, even if *arcuata* Schrank were valid, the name *marginata* would be conserved under the Principle of Conservation of the Copenhagen Congress, 1953.

The reference to Schrank's record might be the curious *Trupanea arcuata* (Fabr.) Schrank, nec. Fabr. which seems merely to mean that Schrank made a wrong identification and that there is no *arcuata* Schrank as stated in a letter from Dr. van Emden of the Commonwealth Institute of Entomology.

Rondani 1870, *Dipt. Ital. Prodr.*, gives *Tephritis arcuata* (? Fabr.), seeming to be in doubt; Efflatoun 1924 puts Schrank's *arcuata* as a synonym of *marginata*, but Hendel rejects it.

Material.

EUROPE. Germany, 13♂♂, 4♀♀ from the late Dr. Walther Horn. England, 5♂♂, 6♀♀ from Mr. M. Niblett. NORTH AFRICA. Egypt, 1♂, 1♀, from Prof. Efflatoun.

Apart from the relatively shorter oviscapae, the main difference in this form is in the appearance of the apical band of the wing-pattern. The hook is usually well marked, with a hyaline spot below tip of vein 2 and often another inwards of it on vein 3; these spots and the indent at the hook may enlarge and coalesce so that the apical band is divided (fig. 13) and this happens in a fair proportion of specimens, 14 out of 22, and in 2 from Egypt.

Sphenella marginata austrina ssp. nov.

Sphenella marginata (Fall.) Bezzi, 1908, *Bol. Soc. Ent. Ital.*, 39:141; 1924, *Ann. S. Afr. Mus.*, 19:544, Pl. xiv, fig. 94; 1924, *Bull. ent. Res.*, 15:135. Munro, 1925, *Dept. Agric., S. Afr., Ent. Mem.*, No. 3:57; 1926, *id.* No. 5:28; 1935, *id.* No. 9:40; 1929, *Ann. S. Afr. Mus.*, 29:28; 1934, *Amer. Mus. Nov.*, 739:3.

Sphenella melanostigma (? Bez. 1908) Bezzi, 1928, *Ann. Tvl. Mus.*, 12:334 (*marginata* ♂, not *nigricornis*).

Holotype ♂ and three slides of terminalia, allotype ♀, Kimberley, Picardi, July 1950, Power & Munro.

The following paratypes are in the S. Afr. Nat. Coll. of Insects, Pretoria, except as indicated:

SOUTH AFRICA. *Western and Southwestern Cape*: 1♂, Clovelly, Nov. 1931; 2♂♂, 1♀, Melkbosstrand, 13.x.48; 4♂♂, 2♀♀, Strand, Dec. 1949; 4♂♂, 2♀♀, Hout Bay, Sept. 1953, H. K. Munro. 1♂, Matjesfontein, Oct. 1935, W. E. Marriott. 1♀, Zoutendalsvallei, 21.ix.48, G. van Son. 8♂♂ (+ 11♂, 1♀, S. Afr. Mus.) Kamieskroon, Sept. 1930, S. Afr. Mus. Exp. *Southern Cape*: 1♂, Capetown, Sept. 1913, G. Péringuey (S.A.M.); 1♀, Cedarbergen, 4-5000 ft., Sept. 1925, K. M. Barnard (S.A.M.); 1♂ (+ 8♂♂, 1♀, S.A.M.) Tradouw Pass, Nov. 1925, S. Afr. Mus. Exp. 1♀, Swellendam, 21.ix.48, W. E. Marriott. 1♀, Riversdale, 24.vii.50; 1♂, 2♀♀, Little Brak, 22.ix.50; 3♂♂, 2♀♀, Mossel Bay, 22.ix.50; 1♀, Camfer (George), 18.viii.48, C. G. C. Dickson. 1♀, Knysna, Oct. 1916, L. Péringuey (S.A.M.). 1♂, near Knysna, xi.1931, Miss. A. Mackie (Commonwealth Inst. Ent.). 1♂, Carnarvon, 1884 (S.A.M.). *Eastern Cape*: 7♂♂, 12♀♀, East London, Arnoldton, Peddie,

Prospect, 1921-1924, H.K.M. 1 ♂, East London, Sept. 1947, G. C. Clark. 12 ♂♂, 6 ♀♀, Port Elizabeth, June-Nov. 1950, C. G. C. Dickson. 2 ♀♀, Grahamstown (Manley Flats), 6.vii.47, H.K.M. *Northern Cape*: 8 ♂♂, 6 ♀♀, Middelburg, May 1924; 1 ♂, Kimberley, 15 m. S., H.K.M. 1 ♂, 13 ♀♀ (topoparatypes), Kimberly (Picardi), July 1950, Power & Munro. 11 ♂♂, 5 ♀♀, Kalahari Gemsbok National Park (Twee Rivieren, May 22-24, 1956, H.K.M. *Orange Free State*: Bloemfontein, 1 ♂, 18.x.23, H. E. Irving; 3 ♂♂, 3 ♀♀, Oct. 1952, E. K. Hartwig. 1 ♂, 1 ♀, Klippiesspan, Boshof, 21.iv.48; 1 ♂, Kalkfontein Dam, 20.vii.50, H.K.M.; 1 ♂, 2 ♀♀, Jacobsdal, July 1950, Power & Munro. *Natal*: 1 ♂, 1 ♀, Port Shepstone, May 1926; 1 ♂, Winkelspruit, July 1935; 1 ♂, 1 ♀, Umkomaas, 18.x.34, H.K.M.; 1 ♂, Umkomaas, July 1948, A. L. Capener. 2 ♂♂, 4 ♀♀, Durban (Bluff), 6.x.34, H.K.M. 2 ♂♂, 2 ♀♀, Durban, Sept. 1934; 1 ♀, Sept. 1946; Durban (Umbilo), Sept. 1934; Durban (Cowey's Hill), 6.xii.36, W. E. Marriott. 3 ♀♀, Durban, vii. 1948, J. C. Faure. 1 ♂, Durban, Sept. 1929, C. van der Merwe (S. A. Mus.). 3 ♂♂, 2 ♀♀, Kloof, 5-7.x.34; 1 ♀, Pietermaritzburg, Oct. 1934, H.K.M. 1 ♂, 11.vii.54, B. Stuckenberg. 1 ♂, Hilton Road, Aug. 1941; 1 ♂, 1 ♀, Cedara, 7.xi.49, W. E. Marriott. 4 ♂♂, 2 ♀♀, Mposa, Zululand, Oct. 1951, H.K.M. 3 ♂♂, 3 ♀♀, St. Lucia Lake, Sept. 1938, W.E.M. 3 ♂♂, 4 ♀♀, Utrecht (Welgevonden), 14.xii.50, H.K.M. 1 ♂, Weenen, V. 1924, H. P. Thomasset. *Drakensberg*: 2 ♂♂, Cathedral area, 20-23.iii.55, H.K.M. 1 ♂, 1 ♀, Natal National Park, Mar. 1935; 1 ♂, Umlambonja, July 1944; 1 ♀, Loteni River, July 1941, W. E. Marriott. *Basutoland*: 17 ♂♂, 4 ♀♀, Mamathes, xii. 1947 to vi.1948, C. Jacot-Guillarmod; 1 ♂, 1 ♀, 17.i.54, L. Bevis. 1 ♂, Malealea, 3 ♂♂, Molomoshhoek, March 1944, H.K.M. 1 ♂, Pulane, near Mateka, 5.i.54; Jordan Valley, near Likhatleng Pass, 6.i.54, L. Bevis. *Orange Free State*: 1 ♂, 1 ♀, Ficksburg, ii-iii.1932, Mrs. L. Ogilvie; 1 ♀, Miss. A. Mackie. *Transvaal*: Pretoria, 3 ♂♂, 16.xii.25; 1 ♂, 13.x.30; 1 ♂, 15.x.30; 2 ♂♂, 3 ♀♀, Belfast, 26.x.50; 2 ♂♂, 3 ♀♀, Pilgrimsrest, 2.xi.50, H.K.M. 1 ♂, Acornhoek, Nov. 1918, R. W. Tucker (S. A. Mus.). *Portuguese East Africa*: 1 ♀, Lourenço Marques, 17.ix.28, H.K.M. KENYA. 3 ♂♂, 3 ♀♀, Muguga, ii-x, 1953, V. F. Eastop. 1 ♀, Uplands, vii.1937, V.G.L. van Someren; 6 ♂♂, 15 ♀♀, Londiani, xi.1937, V.G.L. van Someren (ex Coryndon Museum). ERITREA. 1 ♂, 1 ♀, Asmara, Acria, 1.vi.50, G. de Lotto; 1 ♂, 1 ♀, Asmara, Bet Gherghis, 8.iv.50, G. De Lotto.

In African specimens the hook on the inner margin of the apical band is usually marked, but variable, with a moderate hyaline spot below the tip of vein 2 (fig. 14). The indent at the hook and this spot do not coalesce; they may become larger in East African specimens, very rarely dividing the band — only in one from Eritrea. In South African specimens the hook tends to extend downwards to join the lower margin and enclose a hyaline spot; the hyaline spots may vanish and leave an entire band (fig. 15) which is generally wider than in *nigricornis*.

The oviscapae is relatively longer, 0.2 to 0.24 wing-length and noticeably so to the eye. In a few South African males the femora become somewhat blackened. The general picture given by the African subspecies is that it tends to become blacker towards the south.

The first record from South Africa, apart from the doubtful *melanostigma*, is that Bezzi in 1924. The subspecies is widespread in Southern Africa and probably occurs continuously along the east to Eritrea, but there are gaps, especially in Moçambique and Tanganyika, where little collecting has been done. It has not been found on the west from Angola to the Gold Coast. Specimens from Madagascar are too few to decide whether they are the same as the African form.

***Sphenella marginata ruficeps* (Macq.).**

Urophora ruficeps Macquart, 1850, *Dipt. ex., Suppl.* 4: 288. Pl. 26, fig. 14, ♂.

? *Sphenella ruficeps* (Macq.) Bezzi, 1913, *Mem. Ind. Mus.*, 3: 79.

Trypeta heterura Thomson, 1858, *Dipt. Eugen. Resa.*, 584, 262, ♀.

? *Sphenella heterura* (Thoms.) Bezzi, *Mem. Ind. Mus.*, 3: 73.

Neoholotype ♂, Stanthorpe, Queensland, 11.x.39, R.V.C. Smythe; metaparatypes: 1 ♀, Stanthorpe, Queensland, 3.x.23, F. A. Perkins; 1 ♀, Geeveston, Tasmania, 28.xii.14, G. H. Hardy (in coll. University of Queensland, Brisbane, Australia).

Metallotype ♀ (type of *Trypeta heterura* Thoms.) Sidney: Kinb: No. 198. (in Naturhistoriska Riksmuseum, Stockholm, Sweden).

Metaparatypes: 3 ♂♂, nr. Braidwood, N.S.W., 31.x.51, S. J. Paramanov (2 in coll. Hering, Berlin, Germany; 1 in Pretoria).

Metaparatypes: Stanthorpe, Queensland, 2-3.x.23, F. A. Perkins, 1 ♂, 1 ♀ in South African National Collection of Insects, Pretoria, and 1 ♂, 1 ♀, Musée national d'Histoire naturelle, Paris — the last pair deposited in Paris as the original type of *ruficeps* was there.

There is only the one species (subspecies) of which *ruficeps* is the male, *heterura* the female. This is confirmed by the specimens kindly sent to me by Mr. F. A. Perkins of the University of Queensland, and by Dr. M. Hering in Berlin. I am also indebted to Dr. R. Malaise for the loan of the type of *heterura*; this was not used as the neoholotype as it is not the same sex as the type of *ruficeps* and it does not agree in the colouration of the femora with the original description.

The type of *ruficeps* is recorded from Tasmania. This locality may be doubtful since it appears that various Diptera recorded by Macquart from Tasmania were probably taken in Australia (see Hardy, G. H., 1929, *Proc. Linn. Soc. N.S.W.*, 54: 61). In view, therefore, of the erection of a neoholotype on a specimen from Australia, there is the possibility that the *ruficeps* type came from the same region; at the same time, the female noted here from Geeveston, Tasmania, is quite like the females from Australia, so that the species occurs in both regions. All the females, including the one previously compared by Dr. Malaise, agree with the *heterura* type. I wrote to Dr. E. Ségué of the Muséum national d'Histoire naturelle in Paris about the type of *ruficeps*. He replied:

"En reponse à votre lettre du 14 février, j'ai le regret de vous informer qu'il m'a été impossible de retrouver le type de l'*Urophora ruficeps*. Cet insecte a dû être détruit depuis 1853."

Macquart's description is:

"12. *Urophora ruficeps* Nob.

Nigra nitida. Capite rufo. Alis fascia, limboque externo fuscis. (Tab. 26, fig. 14).

Long. 1½ l. ♂. Face, front et antennes fauves. Pieds fauves, cuisses noires, à base et extrémité fauves. Ailes à base jaunâtre, la bande sur les deux

nervures transversales; la bordure extérieure interrompue au-delà de la bande; les deux nervures transversales voisines l'une de l'autre."

Therefore, since only the one species is so far known, these males with the black femora are without doubt *ruficeps*, a neotype is erected here.

This subspecies is quite like the typical *marginata*, except for the black femora in the male and the rather longer oviscap, 0.2, and in the *heterura* type 0.225, wing-length. In the 13 specimens examined, on the wing (fig. 16) the apical band is entire, usually with a broad hook, almost absent in one; in three, including the *heterura* type, there is a slight hyaline spot below the tip of vein 2, showing an approach to the more normal *marginata* pattern and which may be more evident in a larger number of specimens. The dark spots on vein 5 tend to disappear. The front pair of femora in the male may be less black than usual. Male: sternites 5 and 6 (fig. 37) slightly bilobed, tergum 9 as in *marginata*, the twisted rods and prensisetæ (fig. 59). Aedeagus (fig. 79) as in *marginata* but the preparation rather twisted and seems somewhat shrivelled, the apical tube appearing to be more projecting.

Biology.

The following notes apply to the species *marginata* as a whole. The recorded host-plants are mostly species of *Senecio*, in Europe and Egypt *Cineraria* and *Centaurea* are also infested; the record from *Tanacetum* seems doubtful. It has not been possible to work out all details of the ecology. While field observation cannot be carried out to the extent it should, and credit is due to those who have done something, it is even more difficult, if at all possible, to do actual breeding of this kind of small, flower-infesting fly.

As is the case with many species of Trypetidae, it is probable that there is only one generation a year. Niblett, 1950, suggests there may be two; this may at least happen now and again, but precise data would need constant observation over a period of years. The degree of infestation is another question. Niblett, 1952, records only one fly from 1200 flower-heads of *Senecio erucifolius*, but such small infestations are fairly frequent. The problem is complicated by reactions to parasites, to the flowering periods of the host-plants and of the latter to weather conditions. None the less, under natural conditions the flies manage to survive, somewhere, somehow; it is only when entirely abnormal conditions prevail that a species may die out, if only locally.

Host-plant preference is important. Here again it is not practicable to carry out breeding experiments to see if flies from larvae in one plant will oviposit in another — they may do so normally, occasionally under stress, or not at all. Niblett, 1947, notes a case when one year groundsell (*Senecio vulgaris*) was common and infested; the next year the groundsell had disappeared and ragwort (*Senecio jacobaea*) was plentiful, but not infested. Ragwort is a recorded host-plant, but it cannot be inferred that the fly would not have gone from the one plant to the other, since the fly population might have died out. Possible or actual host-preferences, with the implied

development of biological races, are of economic importance in the control and eradication of fruitflies of cultivated fruits.

The fly is to be found in all parts of South Africa and adults may be taken throughout the year, mostly in September and October, but also quite often in July. The main breeding season seems to be September and October, when most rearings have been made, and continues to December. Occasional rearings have been made later in autumn and two in July, the coldest time of the year and this, too, in a cold winter area, Kimberley and the neighbouring Jacobsdal.

Records are too few to indicate any preference for one species of *Senecio* or another, nor whether the fly would follow a succession of plant species. On the whole, it will infest any species of *Senecio* in flower, irrespective of the time of year; however, there seems to be some host-preference when compared, for instance, to *nigricornis* which so far has been reared from species of *Senecio* other than those chosen by *marginata*.

Immature Stages.

This is a general account for the species with its curious nest and puparium.

Oviposition, if it has been observed, has not been recorded; the egg may be inserted through the side of a young flower-head. Young larvae are found near the base feeding on the young seeds which are eaten away to leave the cavity of the nest. The larva may take an active part in smoothing the inner walls. The full-grown larva has been described by Efflatoun, 1927, and in detail by De Vos-De Wilde, 1935.

The presence of the larva in the flower-head is generally regarded as forming a gall. Of European material I have only seen a few infested flower-heads of *Senecio vulgaris* received from Mr. Niblett. Schiner, 1858, quotes Frauenfeld as saying „das die Larve auf *Senecio* und *Cineraria* keine Missbildung veranlasse". From what has been seen of many flower-heads in South Africa, the chief impression is that the flower-head may become somewhat enlarged so that one may pick out infested flowers fairly readily, but often not. It can hardly be said that a true gall is formed unless the definition of a gall is somewhat widened. However, another species, *S. orbicula*, does cause considerable swelling of the flower-head it infests (text fig. 1.).

When the seeds ripen and disperse, the capitulum is left bare, but when infested, the nest remains fastened to the capitulum and is easily seen. The nest is relatively large compared to the puparium lying loose in it. The walls are formed of a ring or pallisade of partly eaten seeds usually with the inner surface smooth, and roofed over by the soft mass of white pappi through which the fly makes its way out.

In the infested flower-heads of *Senecio vulgaris* the bracts have closed in so that the old flower-head is pointed at the top; in South Africa the bracts usually extend outwards or even turn downwards to expose the nest surmounted by the pappi.

The puparium has been mentioned by many, Hendel 1927, Efflatoun 1927, and others. It is a stumpy bean-shape, the dorsum and sides strongly convex,

polished black, sometimes brown, the ventral surface small, matt and somewhat sunken. There is usually only one puparium in a nest, once in a while two.

Host-plants.

EUROPE (including England). *ssp. marginata.*

The following records are taken from literature and mention may be made of the important work done by Mr. M. Niblett in rearing British Trypetidae. The plants seem to be the same from which the fly has been repeatedly reared during the past hundred years and more.

Senecio aquaticus Huds.; *S. crispatus* DC.; *S. erucifolius* L.; *S. jacobaea* L.; *S. paludosus* L.; *S. vernalis* W.K.; *S. viscosus* L.; *S. vulgaris* L.; *Centaurea paniculata* L.; *C. rhenana* L.; *Cineraria crista* L.; *Tanacetum* sp. The last is an early record (Curtis 1828) in England and does not seem to have been confirmed by later workers. Schiner says Macquart took the fly on *Tanacetum* in Europe.

EGYPT. *ssp. marginata.*

Senecio coronopifolius Desf.; *Picris sprengeriana* Poir.

KENYA. *ssp. austrina.*

Senecio spp.

SOUTH AFRICA. *ssp. austrina.*

The following bring South African records up to date; the roman numeral after each locality gives the month.

<i>Senecio burchellii</i> DC,	Pilgrims Rest (XI); Bloemfontein (X); Hout Bay (IX).
<i>S. consanguineus</i> DC. var. <i>major</i> DC.	Kimberley (VII); Hout Bay (IX).
<i>Senecio elegans</i> L.	Clovelly (XI); Strand (XII).
<i>S. erubescens</i> Durand.	St. Lucia Lake (X); Pretoria (XII).
<i>S. glutinosus</i> Thb.	Jacobsdal (VII).
<i>S. ruderalis</i> Harv.	East London (IX).
<i>S. speciosus</i> Willd.	Durban (IX); Belfast (X).
<i>Senecio</i> spp. (various)	Middelburg, Cape (V); Matjesfontein (X); Swellendam (IX); Natal National Park (III); Utrecht (XII); Bloemfontein (X).

AUSTRALIA. *ssp. ruficeps.*

This form has not yet been reared.

Parasites.

Braconids and Chalcids occur, but the identification of these small Hymenoptera is difficult. Niblett, 1940, records *Microbracon variator* Nees. in England.

***Sphenella crenata* n.sp.**

Very like *marginata*, the epistome more projecting, that is the width of antennae, about half this in *marginata*; the thoracic pubescence in *marginata* appears more shining translucent, sometimes very slightly reddish; here more opaque yellow and on pleura and especially pteropleura longer and often and apparently more normally, strongly reddish-orange. The flange on tergum 9 of male is distinctive.

Holotype ♂, allotype ♀, 4♂, 7♀ paratypes, KENYA: Nairobi, vii.1937, V.G.L. van Someren, Composite No. 112. Paratypes: 2♂, 2♀, Nairobi, viii.1937, van Someren, Composite 264, 2♂, Ngong, vii.1937, Composite 147, and 1♂, Nairobi, ix.1937. 5♂, 4♀, Nairobi, 2.v.51, G. De Lotto (SAL. 992), from flower-heads of *Senecio discifolius* Oliv.

Length, ♂ 4.2 mm., ♀ 4.5 mm., wing ♂ 4.0 mm., ♀ 4.2 mm. Head (fig. 2) length: height: width, 7:8:10, yellow, clothing yellow of with reddish tinge; frons 0.5 width of head, as long as wide, a little narrowed to antennae; pale bristles yellowish, varying to brownish, or with reddish tinge, or rarely reddish. Antennae 0.9 face, joint 3 deeper yellow, arista dark, rather close, very short pubescent; parafacials about 0.4 antenna; epistome projecting to outer line of antennae, about 1.2 width third joint; gena about 0.2 height of eye, labella 0.8 mouth opening. Thorax black, dust dense grey with golden or bronzy sheen, or in some strongly golden; pubescence coarse, yellow, with reddish tinge especially on sides, often very red; bristles normal, pteropleural yellow; squamae pale yellow, lower about 0.6 upper; halteres brownish or yellow to orange. Scutellum yellow, flat, apical bristles slightly shorter; postscutellar area black, grey dust; legs normal, front coxae blackish; wing (fig. 17) apical band as a rule divided. Abdomen black, tergum 2 mainly yellow, or with blackish tinge, 3 and 4 with yellow hind margin about quarter length, a little more in middle, 5 black, apical half yellow and in middle almost to anterior edge; dust slight, grey on black; pubescence yellow, apical bristles brown. Oviscape slightly blackish ferruginous, pubescence on anterior two thirds pale yellow, coarse, apically fine, shining brown; 0.2 wing-length or a little less. Male: sternites 5 and 6 (fig. 38); tergum 9 (fig. 60, a, post., b, lat.), flanges large, setose, prominent in posterior aspect and may be readily seen on pinned specimen; prensiseta normal, one in one preparation almost divided into two. Aedeagus (fig. 80, b, lat., a, dorsal), the figures show the general appearance of the apical „tube” and the hood-like vesica.

***Sphenella orbicula* n.sp.**

A smaller species like *marginata*; epistome short with dark pubescence on the sides.

Holotype ♂, allotype ♀, 10♀, 9♀ paratypes, TRANSVAAL: Pilgrims Rest, 2.xi.50; also 6♂, 4♀, Brits, March 1936, H. K. Munro. NATAL: 13♂, 9♀, Pietermaritzburg, Dec. 1941, F. L. Warren. 2♂, Greytown, March 1936, W. E. Marriott.

Note: 1♀, Ruanda, Kibungu, 2.ii.1953, P. Basilewsky, in coll. Mus. Congo,

Tervuren, Belgium. This appears to be the same as the South African specimens, but has a rather darker and heavier wing-pattern; more specimens are needed.

Length, ♂ 3.4 mm., ♀ 3.5 mm., wing, ♂ 3.3 mm., ♀ 3.4 mm. Head (fig. 3) yellow, length:height:width, 6:8:10, clothing yellow, on sides of epistome, genal bristle and behind brown; postorbitals with 2 or 3 yellow and 2 or 3 black setae; frons 0.4 width of head, width 0.8 length, not narrowed to antennae; antennae 0.8 face, arista sparsely micropubescent. parafacials narrow, 0.2 width third antennal joint, genae narrow, barely 0.1 height of eye; epistome short, projecting 0.4 antennae; labella 0.8 length of mouth opening. Thorax black, humeri to wing-base yellow; dorsum: dust rather slight, bronzy, on pleura and post-scutellum grey, pubescence yellow; bristles normal, dorso-centrals about half way between suture and anterior supra-alars; scutellum flat, yellow, 4 long bristles; pteropleural bristle, halteres and squamae yellow, latter about equal width; legs brown, hind femora black below, in male a row of 6 antero-ventral bristles on a little more than half distal length, in female 2 at end. Wing (fig. 18), pattern like *marginata*, very variable, especially apical band; mostly the hook extends, even if palely, to vein 4, in male type a moderate hyaline spot below vein 2, none in female type and some others; the hook does not quite disappear, but the pattern may approach that of female *nigicornis* which also has dark pubescence on sides of epistome, but here the epistome and oviscapae are shorter; apical band rarely divided and the basal cells are usually darker than in *marginata*. Abdomen black, rather shining, dust slight, hind edges of tergites weakly yellow; pubescence yellow; apical bristles black. Oviscape short, 0.18 wing-length, black, pubescence on anterior half white, posterior fine, black. Male: sternites 5 and 6 (fig. 39); tergum 9 (fig. 61a); flange (fig. 61, b. c.) finely crenulate, the fine divisions may be rounded on one side, pointed on the other on the same specimen; aedeagus (fig. 81) normal.



Text-fig. 1. *Senecio orbicularis*; two normal flowers (right) and two galled by larvae of *Sphenella orbicula*.

Biology.

At Pilgrims Rest and at Brits the puparia were found in the flower-heads of *Senecio orbicularis* Sond., at Pietermaritzburg of *S. oxyriifolius* DC.; the seeds are eaten and the usual cavity formed. The presence of the larva causes moderate to marked swelling of the flower-head, in *S. orbicularis* often strongly so. Text. fig. 1 shows galled and normal flower-heads of *Senecio orbicularis* about twice natural size.

***Sphenella melanostigma* Bez. sp. incert.**

Bezzi, 1908, *Jena Denks. Med. Ges.*, 13 : 194; *Bull. ent. Res.*, 15 : 135. cf. Munro, 1935, *Dept. Agric., Ent. Mem.*, No. 9 : 41, also, *S. nigricornis* Bez.
NOT *melanostigma* but *marginata*: Bezzi, 1928, *Ann. Tvl. Mus.*, 12 : 334.

It is evident that Bezzi regarded this as a variety of *marginata* with a darker apical band on the wing. When I later reared *nigricornis*, described on a male, it seemed that the description of the wing-pattern of *melanostigma*, which is all Bezzi gives, applied better to the female of this than to *marginata*, so *melanostigma* was used instead of *nigricornis*. Difficulty arose when it became apparent that the wing-pattern, especially the apical band, in South African specimens of *marginata* was variable and became so like that of females of *nigricornis*, that on this alone the two could not be separated, the description of *melanostigma* being quite insufficient to say which it might be. However, the females of *nigricornis* and *marginata* may be distinguished by the colour of the pubescence on the sides of the epistome, black in the former, yellow in the latter. It was thus necessary to discover what it is in the type of *melanostigma*. I wrote to Dr. Hering in Berlin; he replied that it may not be possible to find the type in the near future as there is an enormous amount of material of flies in alcohol and it may be years before all the species could be sorted out. Bezzi once wrote to me that the type was most probably in the Zoological Museum of the University in Berlin, but Hering suggested that it might not even be there. If the type is lost, *melanostigma* must remain a *nomen dubium* and would best be discarded to prevent any future confusion.

***Sphenella nigricornis* Bez.**

Sphenella nigricornis Bezzi, 1924, *Ann. S. Afr. Mus.*, 19 : 545; 1924, *Bull. ent. Res.*, 15 : 135. Munro, 1926, *Dept. Agric., Ent. Mem.*, No. 5 : 28; 1929, *Ann. S. Afr. Mus.*, 29 : 28. Phillips, 1946, *Mem. Amer. ent. Soc.*, No. 12 : 121.
Sphenella melanostigma ? Bezzi 1908. Bezzi, 1924, *Ann. S. Afr. Mus.*, 19 : 544, Pl. xiv, fig. 95. Munro, 1935, *Dept. Agric., Ent. Mem.*, No. 9 : 41. Phillips, l.c.
Sphenella marginata, var *melanostigma* Bezzi, 1928, *Ann. Tvl. Mus.*, 12 : 334. Munro, 1929, *Ann. S. Afr. Mus.*, 29 : 28 (mixed *marginata* and *nigricornis*).

As has been stated, it is not at present possible to say whether *melanostigma* Bezzi 1908 should apply to *marginata* or to *nigricornis*. In the above synonymy the name *melanostigma* has been included for references that are definitely *nigricornis*.

The male of *nigricornis* is readily distinguished from *marginata* by the black antennae, face and femora and the female, as also the male, by the black

pubescence on sides of the epistome and a little behind, the genal bristles and setae among the yellow postorbital bristles; in *marginata* all are yellow. Females of the two are otherwise much alike and cannot always be separated on the wing-pattern. The pattern in *nigricornis* (fig. 19) is, however, generally noticeably blacker, especially the costal cells; the apical band entire, rarely with hyaline spots or a trace of a hook, and the blacker stigma may at times have a paler spot.

Male: sternite 5 (fig. 41) strongly bilobed and bristly, 6 with a well-marked "hole". Tergum 9: the appearance of the lower portion (cerci) is difficult to describe and even to figure. Fig. 62a shows the tergum somewhat obliquely; on the left the scoop-like cercus is seen more from above, the rather broad upper process appearing as a turned-in point on the right; fig. 62b is more enlarged and the structure is seen more from below so that it seems more funnel-like with very irregular margins. The small flange is also shown. Each modified twisted rod with a single, finely striate preniseta. Aedeagus (fig. 82) does not differ greatly from others of the genus. Spermatheca (fig. 94b).

Material.

SOUTH AFRICA. *Cape Province*: 1 ♂, Murraysburg Dist., March 1931, Mus. Exp. (S. Afr. Mus.); 1 ♂, Willowvale, 6.i.17 (S.A.M.) 1 ♂, Toise River, 20.i.25, H. K. Munro. 1 ♂, Lady Grey, 6.i.25, R. I. Nel. 1 ♂, Belmont, 12 m. south-west, H.K.M. 1 ♀, Witput Rail, 4.x.30, S. J. S. Marais. 83 ♂ ♂, 77 ♀ ♀, Kimberley (Picardi) July 1950, H.K.M. 22 ♂ ♂, 18 ♀ ♀, Richtersveld, Hellskloof and Doodsloot, Sept. 1953; 4 ♂ ♂, 4 ♀ ♀, Alexander Bay, Sept. 1953, H.K.M. 1 ♀, Kamieskroon, Namaqualand, Sept. 1930, Mus. Exp. (S.A.M.); 1 ♀, Garies, Namaqualand, June 1930, Mus. Exp. (S.A.M.). *Natal*: 1 ♂, Durban, (Cowie's Hill) 27.ix.36, W. E. Marriott. 1 ♂, 1 ♀, Kloof, 5.x.34; 19 ♂ ♂, 14 ♀ ♀, Estcourt, 16.xii.54, H.K.M. Drakensberg, 1 ♂, Natal National Park, Feb. 1946, W.E.M. 1 ♀, Cathkin Peak area, 15.x.50, G. C. Clark and 2 ♀ ♀, 20-23.ii.55, H.K.M. *Basutoland*: 6 ♂ ♂, 4 ♀ ♀, Mamathes, Feb. May, 1940, 2 ♂ ♂, 2 ♀ ♀, 8.ii.48, C. Jacot-Guillarmod. 3 ♂ ♂, 1 ♀, Molomoshhoek, March 1944, H.K.M. 2 ♀ ♀, Little Bokong River, 5.i.47; 1 ♀, near Morija, 25.i.55, 5400 ft. L. Bevis. *Transvaal*: Pretoria, 1 ♀, 11.xi.17, 1 ♂, 2 ♀ ♀, Nov. 1925, 1 ♀, 13.ii.31; 24 ♂ ♂, 15 ♀ ♀ (Daspoort), Dec. 1933; 1 ♀ (Kameeldrift), 2.xi.48, 22 ♂ ♂, 14 ♀ ♀, Pinedene, 7.xii.33; 1 ♂, 1 ♀, Bapsfontein, 7.xii.33; 9 ♂ ♂, 4 ♀ ♀, Lydenberg, 26.x.50, H.K.M. 1 ♂, 1 ♀, Johannesburg (Bedford View) 8.ii.50, A. L. Capener. Type ♂, Messina, N. Tvl., Dec. 1918, R. W. Tucker (S.A.M.). *South West Africa*: 2 ♂ ♂, Halenberg, Namib, 6.xii.48, Koch & van Son (Tvl. Mus.)

Biology.

This is a dominant species in South Africa. It appears wide-spread in an area bounded by a line from Messina in the northern Transvaal, to Kimberley, East London, Durban and back to Messina, and in this area overlaps the distribution of *marginata*. It is also common in the Richtersveld (Little Namaqualand) and has been taken in the Namib in South West Africa. It has not yet been found in the greater part of the southwest, south and central Cape where only *marginata* has been recorded.

Nigricornis may be found throughout the year in one locality or another depending on the flowering period of the host-plant. It has not been observed whether there may be more than one distinct generation in the year, but

oviposition may extend over a period as long as flowers are available, in a rearing in 1933 near Pretoria, in one bunch of flower-heads of *Senecio latifolius* were very young, full-grown larvae and puparia.

The effect of the larva on the flower-head varies; if the egg is laid in a younger head, this tends to become somewhat swollen, but an older head does not, remaining thin and narrow and quite like an uninfested head. In the smaller flower-heads of *Senecio* species and of some *Othonna*, there is as a rule only one puparium in the nest, rarely two. That the fly may adapt itself to better conditions is shown by a heavy infestation of *Othonna auriculifolia* found at Picardi near Kimberley in 1950. The plant is low-growing and semi-succulent with several large flower-heads that were much eaten by cattle. These larger flower-heads, about 1 cm. in diameter, have a rather soft, fleshy capitulum in which from one to seven puparia were found, each puparium in a black-lined cell. Then, while some of the flies emerge upwards through the dense mass of pappi, as a further adaptation the larvae in cells deeper in the base prepare an „exit” on the side for emergence. The adults, too, from this rearing are markedly larger than usual.

Host-plants.

Sphenella nigricornis shows a strong preference for species of *Othonna*; the *Senecio* species recorded are different from those infested by *S. marginata*. The Roman figures after each locality give the month.

<i>Hertia pallens</i> (DC.) O. Ktze.	Witput, Cape (X).
(Springbokbos, previously under <i>Othonna</i>).	
<i>Othonna auriculifolia</i> Licht.	Kimberly (VII).
<i>O. carnosa</i> Less.	Richtersveld (X).
<i>O. sedifolia</i> DC.	Richtersveld (X).
<i>Othonna</i> sp. (? sp. n.)	Richtersveld (X).
<i>O. scapigera</i> Harv.	Lydenburg (X).
<i>Senecio latifolius</i> DC.	Toise River, Cape (I).
<i>S. othonnaeflorus</i> DC.	Pretoria (II).
<i>S. paucicalycalatus</i> Klatt	Estcourt, Natal (XII).

Sphenella sinensis (Thoms.).

- Trypeta sinensis* Thomson, 1858, *Dipt. Eugenia Resa.* : 585.
Sphenella sinensis (Thoms.) Zia, 1937, *Sinensia*, 8 : 196.
Sphenella sinensis Schiner (nec. Thoms.) Schiner, 1868, *Dipt. Novara Reise.* : 267. Bezzi, 1913, *Mem. Ind. Mus.*, 3 : 79. Munro, 1935, *Arb. phys. angew. Ent.*, 2 : 262. Zia, 1937, *Sinensia*, 8 : 196.
Sphenella indica Schiner, 1868, *Dipt. Novara Reise.* : 267. v. d. Wulp, 1896, *Cat. Dipt. S. Asia.* : 194. de Meijere, 1914, *Tijdschr. v. Ent.*, 57 : 219, Taf. 6, Fig. 22. White, 1924, *Cat. Ind. Ins.*, 4, *Tryp.* : 26. (Shiraki) 1932, *Icon. Ins. Jap.* : 41, fig. 74 (in Japanese). Shiraki, 1933, *Tryp. Jap. Emp.* : 402. Munro, 1935, *Arb. phys. angew. Ent.*, 2 : 262. Hering, 1941, *Arb. morph. u. tax. Ent.*, 8 : 38.

From a survey of available data it is certain that there is only the one oriental species as shown in the synonymy. In addition to the two specimens I have (as *indica*) from Formosa, I am much indebted to Dr. R. Malaise in Stockholm for the loan of the type ♀ and a male paratype of *Trypeta sinensis* Thoms., and to Dr. Max Beier in Vienna for drawings of the wings of the types of *sinensis* Schin. and *indica* Schin.

The first indication of the identity of the species is the figure of the wing given by Bezzi, 1913, and it is possibly because of this figure that the species has mostly been called *indica*. The two Formosa specimens (fig. 21) agree with the pattern of this figure and with that of the type of *sinensis* Thoms. (fig. 20) but in the male paratype the hook extends downwards to join the lower margin of the band and enclose a hyaline spot. The sketches of the wings of Schiner's types have been re-drawn, *sinensis* (fig. 22), *indica* (fig. 23). From these figures it will thus be seen that although the upper and lower portions of the inner margin of the apical band are not quite in the same straight line, they are nevertheless about parallel to the outer margin of the middle band, giving a different appearance to what is seen in *marginata* and others in which the inner margin of the apical band diverges outwardly behind. A larger number of specimens will probably show even greater variations in the apical band.

As regards the epistome, Dr. Beier says that the epistome in „*indica*” is not as prominent as Schiner's description implies, and that he feels sure that the latter's two specimens are of the same species.

Bezzi, 1913, states the legs are yellow, but in the four specimens available the hind femora are mainly black, the middle slightly. De Meijere notes that in his specimen from Java the femora are blackened, but his figure of the wing does not give quite the same picture as Bezzi's and those given here but, if anything, rather between them and *marginata*.

Male: sternites 5 and 6 (fig. 42) and tergum 9 (fig. 63) are like *marginata*. The aedeagus (fig. 83) gives a rather different picture to the others in the one preparation; the end of the tube is strongly bent and the vesica apparently much reduced. This may be accidental and more male terminalia should be studied.

Finally, owing to the marked difference in the wing-pattern and at least an apparent difference in the aedeagus, it was decided not to include *sinensis* as a subspecies of *marginata* for the present, although they are undoubtedly very close.

Sphenella atra n.sp.

Wing-pattern very black and heavy, appearing more so on the specimen.

Holotype ♂, 1 ♂ paratype with three slides of terminalia No. 425, Drakensberg, Natal, Cathkin area, July 1942, W. E. Marriott.

A dark brownish-black species. Length 3.75 mm., wing 4.0 mm. Head, length: height: width, 6: 8: 10, yellowish brown or a slight blackish suffusion, the pale bristles brownish, five post orbitals with some black setae, genal bristle and pubescence on sides of epistome dark brown; frons 0.5 head, slightly longer

than wide, narrowed to antennae, slight pale pubescence; antennae a little shorter than face, joint 3 brown, 2 blackish, arista blackish, micropubescent; parafacials 0.4 antennal joint 3; epistome projecting about 0.5 antennae, gena 0.23 height of eye; palpi narrow, brown; labella 0.5 mouth opening. Thorax: dorsum black, dust dense, dark brown, pubescence pale brownish, sparse, coarse; bristles normal, dorso-centrals slightly before anterior supra-alars; pleura, sterna and postscutellum black with rather thinner, greyish dust; humeri to wing-base yellowish; legs brown, femora somewhat blackish on outer side, clothing blackish, femora 3 with 3 to 4 antero-ventral bristles distally and some long hairs below on proximal half; halteres yellow; lower squama about half upper; scutellum brown, apical bristles 0.8 basals; wing (fig. 24) vein 3 bare or an occasional seta outwardly. Abdomen black, hind edges of tergites narrowly yellow, very slight brownish dust, pubescence pale, whitish, apical bristles brown. Male: sternites 5 and 6 (fig. 40); tergum 9 (fig. 64, posteriorly), laterally is seen a slight, even flange; aedeagus (fig. 84).

***Sphenella* *ypsilon* Mro.**

Munro, 1933, *Dept. Agric. S. Afr., Ent. Mem.*, No. 8 : 41, Pl. III, fig. 13.

Only known from the Cape Peninsula, this is the largest of the species of *Sphenella*; it has not been reared.

The heavy, rather diffuse wing-pattern (fig. 25) is somewhat like that of *Oedosphenella caudata* Beck. The costal cells are infuscated to extreme base, but the apical band is not completely united to the median.

Male. Pubescence on sternites rather long; the bilobed appearance of sternite 5 (fig. 43) is less marked; tergum 9 laterally (fig. 65) shows a small flange; prensiseta single as usual; there are no marked differences in the aedeagus (fig. 85).

***Sphenella* *rostrata* n.sp.**

Holotype ♂ and 3 slides of terminalia, allotype ♀, 1 paratype ♀, Drakensberg, top of Sani Pass, Basutoland, 19.iii.39, L. Bevis. Reared from flower-heads of shrubby Composite.

Length ♂, 3.75 mm., ♀ 4.0 mm., wing ♂, 3.8 mm., ♀ 4.3 mm. Head, length: height: width, 6.6:8:10, yellow, broadly black above neck, antennae and frons deeper yellow, almost brown, clothing yellow and usual dark major bristles, only a few pale setae among the postorbitals; frons about 0.5 head, slightly longer than width at vertex, coarse pale pubescence on sides and a little on the middle; lunule short; antennae 0.7 face, arista dark, micropubescent; parafacials 0.3 antennae, epistome projecting about half their width, gena about 0.2 height of eye; labella 0.75 mouth opening. Thorax black, brownish from humeri to wing-base; dorsum: dust brown (bronzy) to upper part of mesopleura, pubescence pale yellow, coarse, rather sparse; pleura, sterna and postscutellum black, grey dust; bristles normal; legs brown, male, hind femora slightly swollen and with row of strong bristles, one being white, antero-ventrally on distal half, almost as strong in female, but 2 or 3 pale, halteres brown;

squamae brownish, lower about 0.6 upper; scutellum blackish, sides above broadly brown, 4 long bristles; wing (fig. 26) pattern like figure in male and paratype, in female type more broken up. Abdomen black, only apical tergite a little yellowish at end; dust moderate, brownish-black, pubescence yellow, apical bristles yellow. Oviscape short, flattened in specimens, 0.15 wing-length, brownish, black at base, pubescence white on basal, black on apical half. Male: sternites 5 and 6 (fig. 44), 5 wide and short; tergum 9 (fig. 66): cerci scoop-like with a pointed apex; flange short; aedeagus (fig. 86), normal.

Biology.

The three specimens are in rather teneral condition. It seems that Mr. Bevis had collected specimens of the plant for the Herbarium, and that the flies emerged after the plants had been put in the press.

Sphenella deletrix n.sp.

The wing-pattern is like that of *rostrata* but much more broken up by hyaline spots; in the male sternite 5 longer and the lobes more pronounced.

Holotype ♂, allotype ♀, 11 ♂, 5 ♀ paratypes, East London (Buffalo Pass), May 1947, 3 ♂, 1 ♀ (Green Point) April 1952, in flower-heads of *Gamolepis chrysanthemoides* DC. 2 ♂♂, East London (Buffalo Pass), 15.v.47, H. K. Munro.

Length ♂ and wing, 4 mm., ♀ and wing, 4 mm. Head, length: height: width, 6:8:9, deep yellow, clothing yellow, the usual bristles and some setae among postorbitals black; frons about 0.5 head, width at vertex 0.8 length, narrowed to antennae; antennae nearly as long as face, dark arista very minutely and sparsely pubescent; parafacials 0.2 antennae, gena about 0.2 height of eye, epistome projecting about half width of antenna; labella 0.6 mouth opening. Thorax black, humeri to wing-base brownish yellow; dorsum: dust moderate, golden, pubescence coarse yellow, pleura and postscutellar area black, light grey dust; bristles normal, pteropleural and smaller, lower mesopleural yellow to brownish; halteres yellowish; squamae whitish, of about equal width; legs brown, in male mid and hind femora blackish ferruginous, hind yellowish on outer side, in male, a row of antero-ventral bristles for nearly whole length, in female the usual 2 or 3; wing (fig. 27), pattern variable; scutellum brown, 4 long bristles. Abdomen black, light grey dust and yellow pubescence, apical bristles brown; hind margins of tergites narrowly yellow or not at all; lateral membranes ferruginous. Oviscape 0.25 wing-length, black, slightly ferruginous before apex, pubescence white on basal half, fine, black on distal half. Male: sternites 5 and 6 (fig. 45), 5 with moderately strong lobes; tergum 9 black (fig. 67) cerci rounded, scoop-like, a short even flange. Aedeagus (fig. 87).

Biology.

The larva lives in the capitulum of the host-plant. This is normally rather flat, but the larva causes it to enlarge upwards to form a small gall, but the flower-head itself is barely enlarged. The cavity is not much larger than

th puparium, the upper part, inside, is black and rough, the lower part, which extends a little into the stem, is brown. The seeds of the flower are apparently not eaten, but probably perish to some extent. The host-plant, *Gamolepis chrysanthemoides* DC. is common along the Buffalo River at East London. It forms bushes up to four feet, with many medium sized yellow-rayed flowers.

***Sphenella hessei* (Mro.) comb. nov.**

Acanthiophilus hessei Munro, 1929, *Ann. S. Afr. Mus.*, 29: 30, Pl. I, fig. 11.

Material: 5 ♂, 4 ♀, paratypes, Tradouw Pass, Swellendam, Nov. 1925, S. Afr. Mus. Exp. (Types in S. Afr. Mus.). 3 ♂♂, Uitenhage, 20.ix.50, C. G. C. Dickson. 48 ♂♂, 54 ♀♀, Kalkfontein Dam, O.F.S., July 1950, H. K. Munro. 1 ♀, Matjesfontein, Cape, 14-27.xi.1928, R. E. Turner. (six other specimens returned to British Museum).

The dimidiate wing-pattern (fig. 28) is distinctive, but the hyaline spotting may be fine to rather coarse. In male femora 3 blackened above and below and a row of antero-ventral bristles on whole length, in female normal 1 or 2 black, 2 or 3 pale; hind margins of tergites usually only slightly yellow, sometimes more so. Oviscape 0.18 wing-length, conical, black, pubescence white, only black at apex. Male: sternites 5 and 6 (fig. 46), 5 moderately bilobed; tergum 9 (fig. 68) wider than high, the cerci scoop-like and well marked off; aedeagus (fig. 88); in the preparation the apical tube appears more prominent and the vesica reduced.

Biology.

The larva lives in the flower-head of *Euryops multifidus* DC. (Compositae), one in a flower, occasionally a second. Most of the seeds are eaten and a spherical cavity formed; there is no marked increase in the size of the flower-head which remains more or less closed up with the mass of pappi above.

In June 1950 Mr. J. H. Power of the MacGregor Museum, Kimberley, sent infested flowers of *Euryops* from the Kalkfontein Dam near Fauresmith; no more than two per cent were infested and parasitism was heavy. However, on a visit made in July the same year, a large area of the plant was in full flower; infestation was about 60 % and parasitism much less. Adult flies were also numerous.

Puparium: length 2.5 mm., bean-shaped, polished black; segmentation well-marked below and ventral surface roughened.

***Sphenella helianthoides* (Bez.).**

Acanthiophilus helianthoides Bezzi, 1926, *Bol. Lab. Zool. Portici*, 18: 296.
Munro, 1926, *Dept. Agric. S. Afr., Ent. Mem.*, No. 5: 32. Phillips, 1946, *Mem. Amer. ent. Soc.*, 12: 104.

Sphenella helianthoides (Bez.) Munro, 1935, *op. cit.* No. 9: 40. Phillips, 1946, *l.c.*: 121.

Material.

Types ♂, ♀, 5 ♂, 4 ♀ paratypes, Toise River, Cape, Jan. 1925,

H. K. Munro. (Note: Bezzi only marked the one male "*Acanthiophilus helianthoides*, type ♂ ♀". When the material was unpacked, this was taken as the holotype ♂, the first following female the allotype, the rest paratypes.) 10 ♂. 4 ♀, Dohne, Cape, May 1925; 1 ♀ Egerton, East London, 14.iii.25, H.K.M. 1 ♂, 1 ♀, Kloof, Natal, 27.ix.36, W. E. Marriott. 5 ♂, 7 ♀, Zoutpansberg, Entabeni, Vera View, May 1953, H.K.M. 1 ♂, 2 ♀ ♀, Mazoe S.R., Dec. 1932, and 1 ♂, 1 ♀, Dec. 1933, W. K. Ford. In Transvaal Museum, 1 ♀, Tskakoma, Zoutpansberg, Nov. 1931; 1 ♂, 1 ♀, Pretoria, 1.ii.32, G. van Son.

This and *deletrix* are very much alike in external appearance, and the description of *deletrix* could apply closely. The male also has a long row of antera-ventral bristles on femora 3, but the variable wing-pattern (fig. 29) is much more reduced, pale and diffuse, sometimes darker; tergum 9 in the male is very different. Oviscape 0.17 wing-length, shining black, pubescence white, only black on apical fifth; it is conical, the apex dorso-ventrally flattened; tip of aculeus (fig. 95c) narrower than in *marginata*. Male: sternites 5 and 6 (fig. 47) normal; tergum 9 (fig. 69a) strongly constricted below; above each rounded, scoop-like cercus with its slightly crenulate edge is an elongate, flat, pointed process — in a male in which the terminalia are visible, the processes have their inner, straight edges close together and have a spatulate appearance. This differ from the flanges which are small and elongate. Each "twisted" rod (fig. 69b) is strongly modified to a broad base from which is bent outwards a narrow, pointed stem on the end of which is the single prensiseta, (fig. 69c) the latter coarsely striate and the margin saw-toothed. The result is that there are four pointed rods projecting below the tergum and they may be seen in lateral view on the specimen. Aedeagus (fig. 89) normal.

Biology.

The first larvae found were in the flowers of *Senecio latifolius* DC., a poisonous veld plant, at Toise River and Dohne in the Eastern Cape. The seeds are eaten leaving the usual cavity. Infested flowers usually enlarge to 3 or 4 times normal size, but sometimes hardly at all. A later rearing was made from flowers of *Lopholaena coriifolia* Phil. & Smith, at Entabeni in the Zoutpansberg. The flower-heads of this plant are much larger than those of the *Senecio* and show no increase in size when infested. The flies from them are larger than usual. Two Mazoe specimens were reared by Mr. Ford, but the host-plant was not identified.

The puparium is shining black to brown; the anterior end is somewhat pointed, beak-like.

Sphenella semisphenella (Bez.).

Acanthiophilus semisphenella Bezzi, 1926, *Bol. Lab. Zool.* 18: 297, Fig. II.E, Munro, 1926, *Dept. Agric., S. Afr., Ent. Mem.*, No. 5: 31. Phillips, 1946, *Mem. Amer. ent. Soc.*, 12: 105.

Sphenella semisphenella (Bez.) Munro, *op cit.* No. 9: 40. Phillips, 1946, *l.c.*: 121.

Distinct on the wing-pattern. Bezzi only described the male type; of the

same reared series, Transvaal, Barberton, Stentor, June 1925, H. K. Munro, I have 1♂ and 2♀. The species seems wide-spread, but not numerous.

TRANSVAAL: 1♂ Pretoria, Klapperkop, Feb. 1952, H.K.M. NATAL: 1♂, Sarnia, Oct. 1935; 1♀, Natal National Park, Nov. 1934; 1♂, Howick (Umgeni River), May 1937, W. E. Marriott.

Head, length:height:width, 6:8:10, eye more rounded oval; clothing yellow, only usual major bristles on frons and setae on antennal joint 2 black; frons width 0.4 head and 0.9 length; epistome projecting 0.4 width of antenna. Thorax, pubescence and dust golden; legs brown, femora 3 with only two or three apical antero-ventral bristles in both sexes; wing (fig. 30), pattern pale. Abdomen rather shining black, dust weak, pubescence sparse, coarse, yellow; hind edges of tergites slightly to moderately yellow. Female like male; length and of wing 3.7 mm. Oviscape 0.2 wing-length, black, pubescence white on anterior half, black posteriorly. Male terminalia much as in *marginata*. Sternites 5 and 6 (fig. 48), 5 not markedly bilobed; tergum 9 (fig. 70a) with a wide, irregularly dentate flange (fig. 70b); aedeagus (fig. 90).

Biology.

All the specimens recorded were reared from flower-heads of species of *Senecio*; the effect of the larvae on the flowers is like that described for others.

<i>Senecio trifurcatus</i> Klatt.	Barberton (VI).
<i>S. coronatus</i> Harv.	Natal National Park (XI); Sarnia (X).
<i>S. verdoorniae</i> Dyer	Pretoria (II).
<i>Senecio</i> sp.	Howick (V).

Sphenella sp.

Three Madagascar specimens from Dr. Paulian have a wing-pattern much more like the oriental *sinensis* than the typical *marginata*. They are in rather poor condition, and as Dr. Paulian hopes to rear more, it is best to wait till a good series of specimens is available.

"*Sphenella*" *nigropilosa* de Meij. sp. incert.

Sphenella nigropilosa de Meijere, 1914, *Tijdschr. v. Ent.*, 57: 220.

No figures are given and there is little in the description to place this species except that the abdominal pubescence is stated to be black. This raises a doubt that the species is a *Sphenella*, in all species of which the pubescence on the abdomen is mainly if not entirely yellow.

OEDOSPHENELLA Frey.

Frey, 1936, *Soc. Sci. Fenn., Comm. Biol.*, 6: 93 (as subgenus of *Sphenella*.)

Scutellum strongly convex, black; neither the heavier wing-pattern, nor the rather shorter labella are of generic importance; vein 3 bare; a row of distal antero-ventral bristles on hind femora; the posterior prongs on tergum 9

in male and the usual two prensisetæ distinguish it from *Sphenella*. Only species the genotype.

***Oedosphenella canariensis* (Macq.).**

Tephritis canariensis Macquart, 1839, *Hist. nat. des Îles Canar., Dipt.*, 3:100; 1843, *Dipt. ex.*, II/3:224. Becker, 1903, *Mitt. zool. Mus. Berl.*, 2:131. Bezzi, 1908, *Bol. Soc. Ent. Ital.*, 39:141.

Trypeta canariensis (Macq.) Loew, 1861, *Berl. ent. Zeit.*, 5:254.

Sphenella canariensis (Macq.) Becker, 1908, *Mitt. zool. Mus. Berl.*, 4:139. Hendel, 1927, *Fl. Pal. Reg.*, 49, *Tryp.*, p. 170, Taf. 12, Fig. 6.

Oedosphenella canariensis (Macq.) Frey, 1936, *Soc. Sci. Fenn., Comm. Biol.* VI, 1:93.

The generic type is only known from the Canary Islands. I have a male from Teneriffe, VI. coll. Lichtwardt, kindly sent to me by the late Dr. Walther Horn.

Head: (fig. 4) frons 0.5 width of head, slight yellow pubescence, 2 lower, 2 upper (hinder pale) orbitals, postorbitals yellow with some black setæ; arista micro-pubescent; labella about 0.6 mouth opening. Thorax: dorso-centrals nearer anterior supra alars, 4 long scutellars; lower squama about as wide as upper. Wing (fig. 31) differs from *Sphenella* species because the apical band is broadly united to middle band on costa, vein 3 with a few setulæ at knot. Abdomen: pubescence fine, black, some pale at base and apex. Male: tergum 9 in posterior view (fig. 71a) rounded, less narrowed below laterally (fig. 71b); posteriorly a pair of laterally flattened prongs; two prensisetæ on each rod as usual; aedeagus (fig. 91) much like *Sphenella*, the vesica moderate. Sternite 5 seems to have been somewhat bilobed but has been flattened in the preparation, a row of rather stout bristles on the hind margin (fig. 49).

Biology.

There is no record that the species has been reared; it may be gall-forming; Frey says simply „taken on various Compositæ.”

BEVISMYIA n.g.

Very like *Oedosphenella*, agreeing in the bare vein 3 (at most 2 or 2 setæ at knot), row of distal antero-ventral bristles on femora 3 and in the male terminalia, in which it differs from *Sphenella*. It may be distinguished from *Oedosphenella* in the angular head and flat or barely convex scutellum. However, in view of the very similar male terminalia it was only hesitatingly that a generic separation was made influenced to some extent by the widely separated areas in which the species are found. There is no intention to postulate that widely separated species could not belong to the same genus. The difference in the shape of the head, oval in *Oedosphenella*, angular in *Bevismyia*, may not ultimately prove of generic value.

Head angular, 2 lower, one dark and one pale upper orbital, ocellars

moderate, 3 to 4 white postorbitals with black setae. Thorax: bristles normal, dorso-centrals just before anterior supra-alars, 4 long scutellars, hind femora with row of 4 strong bristles; wing bare or 1 or 2 setae at knot; lower squama a little narrower than upper. Abdomen, male: tergum 9 with pair of sharp, posterior prongs and the normal two prensisetae.

Type species: the following new species, *Bevismyia basuto*.

***Bevismyia basuto* n.sp.**

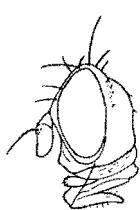
Holotype ♂, Basutoland, Little Bokong River, 5.i.47, L. Bevis (S. Afr. Nat. Coll. Ins., Pretoria); 1 ♂ paratype, Basutoland, Mokhotlong, 14.vi.51, No. 266, Swedish South African Exp., 1950-51, Brinck-Rudebeck (Lund University, Sweden.)

A remarkable species. Length and of wing, 3.7 mm. Head (fig. 5) yellow, angular, fronto-facial angle 105° , bristles normal; length height:width, 7:7:10; frons width 0.9 length, 0.5 width of head, narrowed to antennae, slight pale pubescence anteriorly; lunule short; antennae 0.7 face, joint 3 oval, width 0.7 length, arista micropubescent; parafacials narrow, gena about 0.25 height of eye; epistome projecting about 0.4 third antennal joint; labella 0.6 mouth opening. Thorax black; dorsum: dust brownish, browner before scutellum, pubescence pale yellow; pleura brown, more or less blackened, grey dust, bristles normal, dorso-centrals a little before anterior supra-alars, pteropleural pale; upper squama semicircular, lower wider on middle, narrower each side, about 0.75 upper; halteres brown; legs brownish, femora 3 with strong row of bristles; wing (fig. 32); scutellum brownish, flat, barely convex (in paratype slightly raised in middle), 4 long bristles. Abdomen black, hind margins of tergites narrowly yellow, pubescence black on black, yellow on yellow, dust slight, brownish, apical bristles black. Male: sternites 5 and 6 (fig. 50); tergum 9 (figs. 72, a post., b. lat.) with pair of strong, pointed, posterior prongs and moderate, bristly flanges; two prensiseta on each rod; aedeagus (fig. 92).

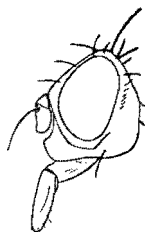
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Note: Names of genera in brackets indicate the earlier location of the species.

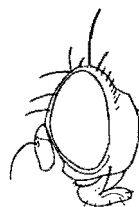
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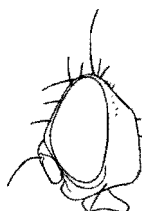
1. *Sphenella marginata*.



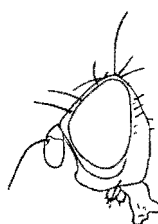
2. *Sphenella crenata*.



3. *Sphenella orbicula*.



4. *Oedosphenella canariensis*.



5. *Bevismyia basuto*.



6. *Telaletes ochracea*.



7. *Orotava caudata*.



8. *Paratephritis incomposita*.



9. *Paratephritis karura*.



10. *Paratephritis umbrifera*, ♂.



11. *Paratephritis umbrifera*, ♀.



12. *Sphenella marginata marginata*: England.

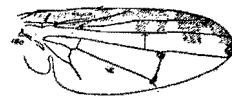


13. *Sphenella marginata marginata*: Germany.

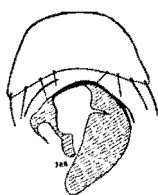


14. *Sphenella marginata austrina*: normal.

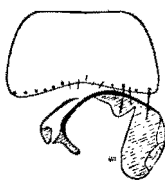
Figs. 1-5, Heads; 6-14, Wings.

15. *Sphenella marginata*
austrina, extreme16. *Sphenella marginata*
ruficeps.17. *Sphenella crenata.*18. *Sphenella orbicula.*19. *Sphenella*
nigricornis.20. *Sphenella sinensis*
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(Formosa).22. *Sphenella sinensis*
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Schin. type.24. *Sphenella atra.*25. *Sphenella ypsilon.*26. *Sphenella rostrata.*27. *Sphenella deletrix.*28. *Sphenella hessei.*29. *Sphenella*
helianthoides.30. *Sphenella*
semisphenella.31. *Oedosphenella*
canariensis.32. *Bevismyia basuto.*

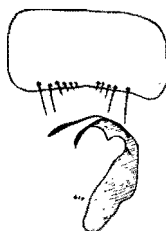
Figs. 15-32, Wings.



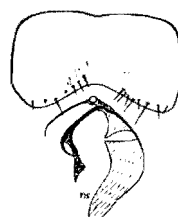
33. *Talaletes*
ochracea.



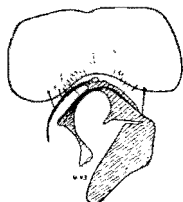
34. *Orotava*.
caudata.



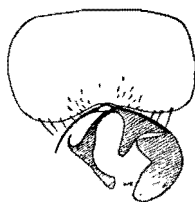
35. *Paratephritis*
incomposita.



36. *Sphenella*
marginata.



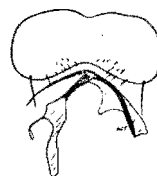
37. *Sphenella*
ruficeps.



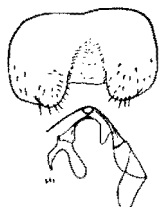
38. *Sphenella*
crenata.



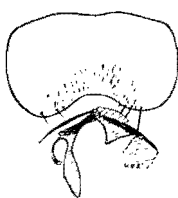
39. *Sphenella*
orbicula.



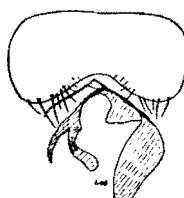
40. *Sphenella*
atra.



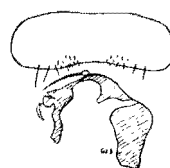
41. *Sphenella*
nigricornis.



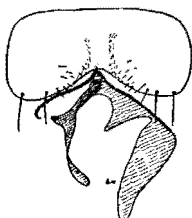
42. *Sphenella*
sinensis.



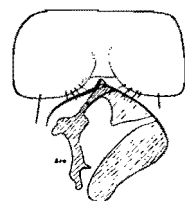
43. *Sphenella*
ypsilon.



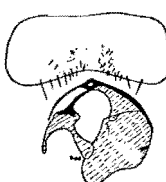
44. *Sphenella*
rostrata.



45. *Sphenella*
deletrix.



46. *Sphenella*
hessei.

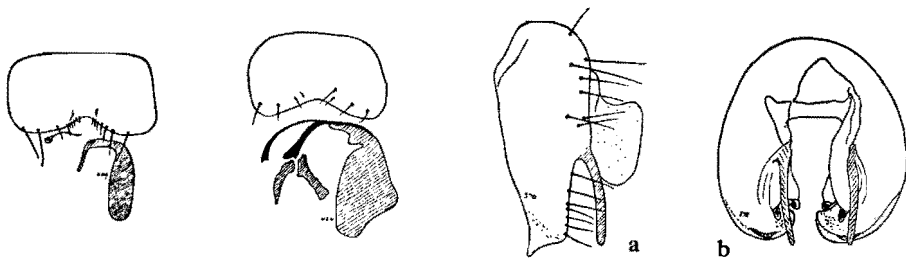
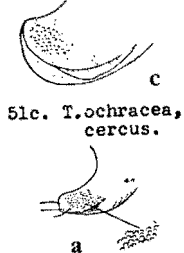
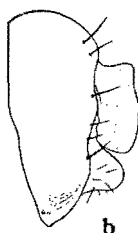
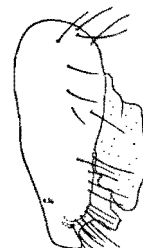
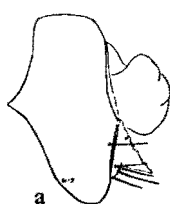
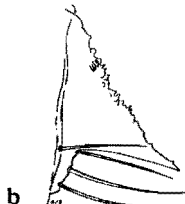
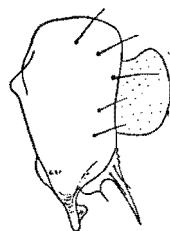
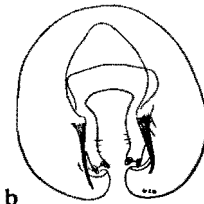
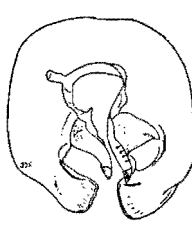
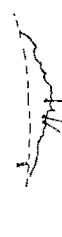


47. *Sphenella*
helianthoides.



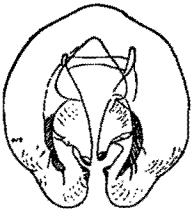
48. *Sphenella*
semisphenella.

Figs. 33-48, Sternites.

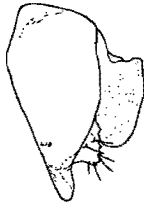
49. *Oedosphenella*
canariensis.50. *Bevismyia*
basuto.51. *Telaletes ochracea*,
Tergum 9, a. lat. b. post.51c. *T. ochracea*,
cercus.52. *Orotava caudata*.
a. cercus; b. tergum 9, lat., c. post, one half;
d. twisted rod and prenisetae.53. *Orotava*
senecionis.
T.9, lat.54. *Paratephritis fukaii*.
a. tergum 9, lat. b. flange.55. *Paratephritis incomposita*.
tergum 9, a. lat.; b. post.56. *Paratephritis*
karura.
tergum 9, lat.57. *Sphenella marginata*.
a. tergum 9, post.;
b. preniseta; c. flange.58. *S. austrina*.
flange.59. *S. ruficeps*.
rods and
prenisetae.

Figs. 49-50, Sternites.

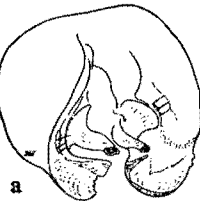
Figs. 51-59, Terga 9 and structures.



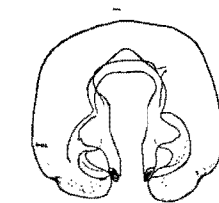
60. *Sphenella crenata*, tergum 9
a. post., b. lat.



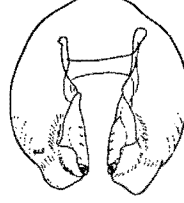
61. *Sphenella orbicula*, a. tergum 9, lat.,
b. left, c. right flange of same
specimen.



62. *Sphenella nigricornis*,
a. tergum 9, post. oblique,
b. cercus.



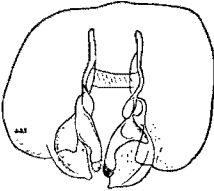
63. *Sphenella sinensis*.



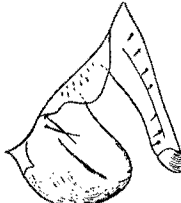
64. *Sphenella atra*.



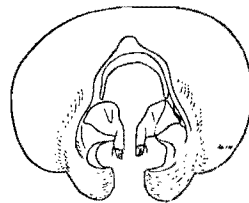
65. *Sphenella ypsilon*.



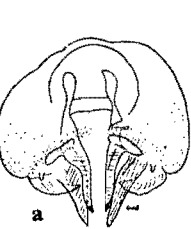
66. *Sphenella rostrata*.



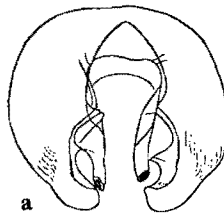
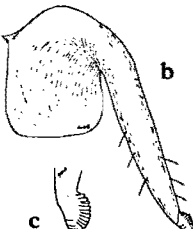
67. *Sphenella deletrix*.



68. *Sphenella hessei*.

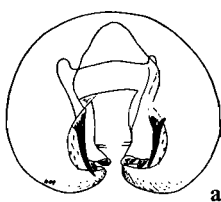


69. *Sphenella helianthoides*, a. tergum 9,
b. twisted rod, c. preniseta.

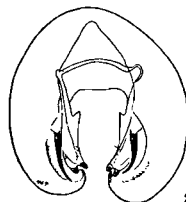


70. *Sphenella semisphenella*,
a. tergum 9, b. flange.

Figs. 60-70, Terga 9 and structures.



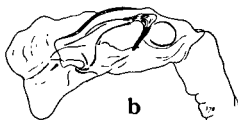
71. *Oedosphenella canariensis*,
tergum 9, a.post., b.lat.



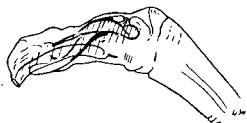
72. *Bevismyia basuto*,
tergum 9, a.post., b.lat.



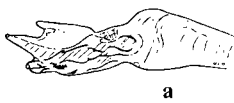
73. *Talaletes ochracea*.
a, b. 2 forms of aedeagus.



74. *Orotava*
caudata.



75. *Orotava*
senecionis.



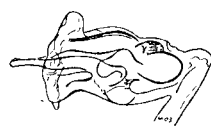
76. *Paratephritis incomposita*,
a.dorso-ventral aspect, b.lateral.



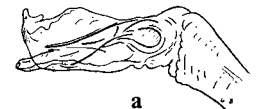
77. *Sphenella marginata*
marginata.



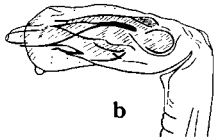
78. *Sphenella marginata*
austrina.



79. *Sphenella marginata*
ruficeps.

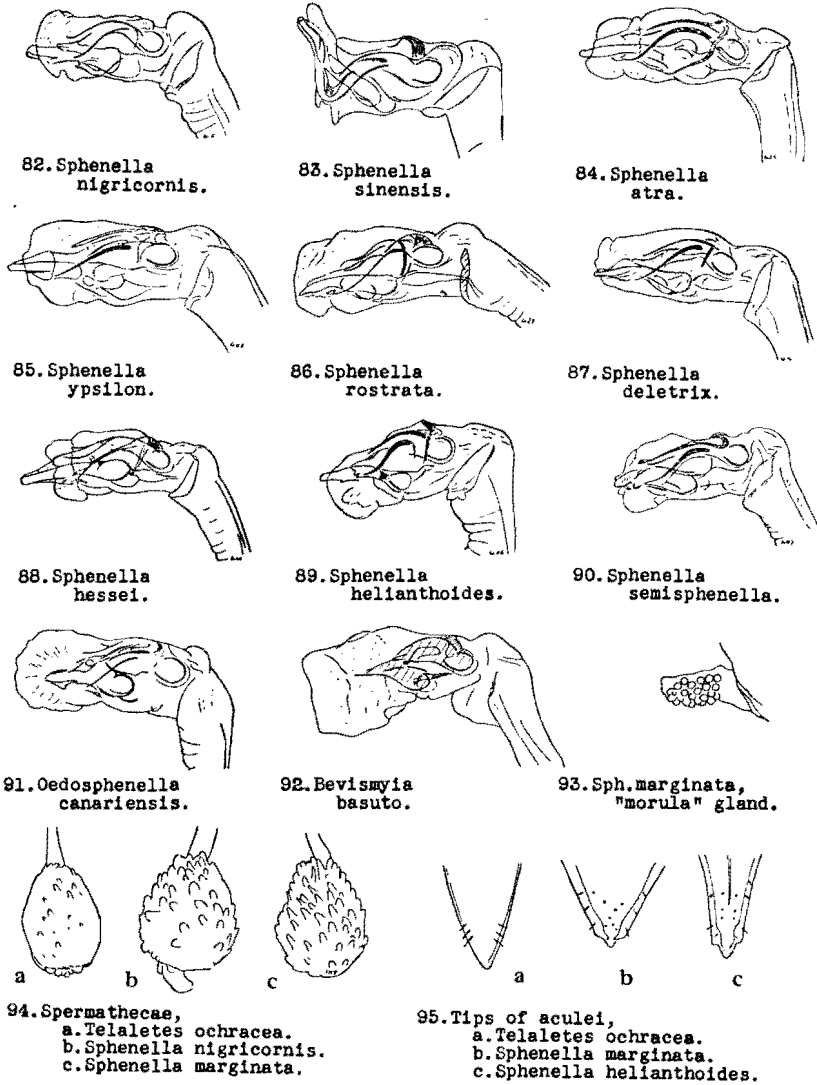


80. *Sphenella crenata*,
a.dorso-ventral aspect, b.lateral.



81. *Sphenella*
orbicula.

Figs.71,72, terga 9.
Figs.73-81, aedeagi.



Figs. 82 - 92. Aedeagi.
 Figs. 93 - 95. Female structures.